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URBAN DESIGN

Winter 2019
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URBAN DESIGN & CLIMATE CHANGE

URBAN DESIGN GROUP

UDG'S NEW CHAIR, LEO HAMMOND, OUTLINES HIS VISION

As Chair of the Urban Design Group, it is a privilege and honour to serving the urban design profession and you, the readers, over the next two years. Even more so as it is the group's 40th anniversary year and 25 years since the publication of Francis Tibbalds' seminal book, *Making People Friendly Towns*.

This seems like a good opportunity to remind ourselves of how the group, and for that matter the profession in the UK started. The old adage of 'you don't know where you are going unless you know where you came from' comes to mind.

In 1978 Francis Tibbalds, Keith Ingham, Percy Johnson-Marshall, Kevin Eastham and others convened a meeting at the RIBA under the title Architects in Planning. The name Urban Design Group was soon coined, with the subtitle: 'a forum for architects, landscape architects and designers in planning'. As Arnold Linden, one of our Patrons, noted: 'The group held from its inception that everyone acting in the environment was an urban designer, whether they were performing positively, negatively or just passively, because the decisions they make (or disregard) affect the quality of urban spaces'.

Fast forward to this year, and there have been many memorable UDG moments, several of which you will find more eloquently described elsewhere in this issue. One of the best of 2018 was the National Planning Policy Framework (NPPF) event in April. Not only was the event a sell-out and the authors from central government attended and contributed, but no less than Griff Rhys Jones, the comedian, television presenter and President of Civic Voice gave the keynote speech. The UDG, in partnership with several other organisations, responded to the design chapter of the consultation draft NPPF, which was substantially improved on its final publication in August.

Other outstanding moments were the National Urban Design Awards evening in the old Westminster County Court in Covent Garden, with Colin Pullan and Amanda Reynolds wearing wigs and waving gavels. Worthy award winners included: the Aldgate public realm scheme by the City of London Corporation; the new mixed use district Altstadtquartier Buchel in Aachen, Germany by Chapman Taylor; and the book *The Art of Building a Garden City: Designing New Communities for the 21st Century* by Kate Henderson, Katy Lock and Hugh Ellis.

The sell-out National Urban Design Conference in beautiful early autumn sunshine and colours in Winchester, focussed on expanding towns and smaller cities. The talks were about the most diverse I can remember, and the debate spilled out of the conference, into the pub, and then into the splendour of Winchester Cathedral Gardens and the UDG annual dinner, where we had the honour of an after dinner speech from Terence O'Rourke.

And of course there was the UDG's trip to China, forging new connections and making a valuable contribution to numerous schemes across Guangzhou. Building on its success, a follow-up event with another Chinese delegation took place in November. We hope there will be future opportunities to share and swap urban design expertise with China and other countries during 2019.

So, what are the plans for the UDG over the next two years? First of all, carry on doing what we do best: this journal, the National Urban Design Awards and Conference, talks and campaigns. Added to these, I have set the group and myself the challenge of raising the profile of urban design and urban designers in the wider industry and amongst the general public. Important debates about house building, street design or social inclusion, all too often don't mention urban design; it is up to us and the UDG to ensure that our voice is heard.

Robert Huxford, UDG Director, and I are in the process of putting together the UDG Executive Committee for the next two years. With a mixture of experienced older hands and new faces, we are starting to shape themes and events. Key themes in development are: town building not house building; understanding great street design; the revival of council housing; local distinctiveness in urban design; and, social inclusion in public spaces.

We plan to have more site visits, study trips, drinking and eating in interesting neighbourhoods, towns and cities, and more quick-fire debate sessions at Cowcross Street. Please let us know if you have ideas on where you think we should be concentrating our efforts. Other items in the UDG's inbox over the next two years will be the development of a new website and our social media.

As the UDG turns 40, the need for urban designers has never been so urgent; we are living in an era of unprecedented change, in technology, climate, work patterns, retail, housing and, dare I say it, Brexit. Urban design is in a very different place to where it was 10 years ago; post credit-crunch urban design has become more creative, as densities get higher, and budgets get smaller. We, at the UDG would like to explore cutting-edge urban design in the UK and around the world in the journal and through events.

Speaking of which I had the pleasure of spending my summer holiday in Nantes, northern France, and was hugely impressed by the transformation of this former industrial city through a huge investment in transport, culture, sustainability and the public realm.

Going forward we hope that the Urban Design Group can fulfil three objectives for its members: to be relevant; to be cutting edge; and to be fun. If you would like to get more involved with the UDG please do get in touch. ●

Leo Hammond, Chair of the Urban Design Group and Associate at Pollard Thomas Edwards

DIARY OF EVENTS

Throughout 2019 the UDG will be marking the 25th Anniversary of the publication of Francis Tibbalds book *Making People Friendly Towns* with a series of events on the theme of Making People Friendly Places. If you would like to run your own Making People Friendly event – please contact administration@udg.org.uk.
See www.udg.org.uk for further details.

31 JANUARY 2019
6.15pm Low Traffic Neighbourhoods
Creating people friendly neighbourhoods

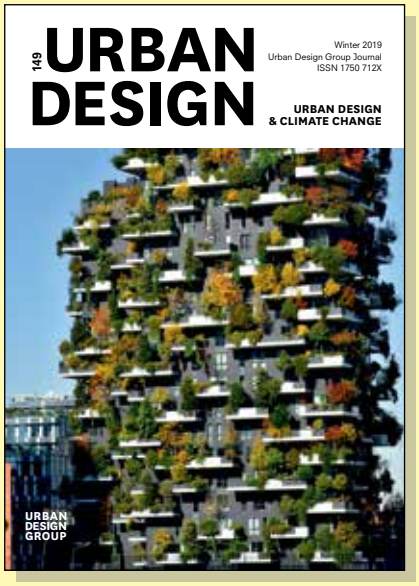
19 FEBRUARY 2019
6.15pm UDG Goes Global
Guangzhou Knowledge Exchange trip

12 MARCH 2019
2.00pm Crossing the Street
How better design and management can help create people friendly streets

13 MARCH 2019
6.15pm Climate Change
On the theme of Urban Design 149

28 MARCH 2019
National Urban Design Awards
The Tab Centre, London E2 7NT
– see Awards supplement for details

3 APRIL 2019
6.15pm Mixing Uses + Activities
Alternatives to single-use mono-culture development



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UD151 Politicians and Urban Design

Action Now

Editing the Winter issue of Urban Design is always an occasion for reflection on the past year and for looking forward to the next. Twelve months ago, the world situation was about as chaotic as it is today and I mentioned the need for urban design to adapt to changing circumstances. This issue is trying to do exactly that as climate change is one of the greatest threats to our collective future.

We won't be able to convince the refuseniks and we probably won't have great influence on the politicians and business leaders who, even if they know the danger created by climate change, won't risk their careers by doing anything about it. But we can act first as citizens and secondly as professionals, to limit the damage to the environment, mitigate the effects of climate change and make sure that cities can adapt to the changes. We can also support those politicians and entrepreneurs that are taking bold action.

The articles collected here by Amy Kirbyshire and Ben Smith describe a range of issues that we need to deal with and the choice of approaches that are available, within the context of the urban design profession. For rising temperatures for instance, the solutions may be in the building design and materials, the street layout and landscaping. To respond to an increased danger of flooding, buildings may have to be adapted, new development may have to be further away from risk areas and in some cases urban areas may have to be relocated. Access to cleaner energy and the elimination of the internal combustion engine will require a new approach to the design of streets and to the management of energy distribution.

Most of all, the potential solutions require new forms of collaboration as they will only be successful if applied holistically. Existing professional silos, already damaging at present, will be disastrous when dealing with climate change; several of the articles in this issue refer to the need for synergies between the various approaches. Urban designers are in a good position to achieve these by bringing the various specialists around the table early on in the design process and making clear to all stakeholders that measure have to be taken from the start. However, to be successful, and convincing, they need to have some understanding of the science, of the alternatives available, of the costs of various approaches (including the cost of no action), and of the implications on the designs. This will not be easy but the urban design principles that we have been advocating for many years are a good starting point.

There are still many unknowns in this field, although fewer than the critics say. The one thing that is certain is that we cannot wait. A number of national governments aren't doing much to save the planet but encouragingly, city governments are being more proactive. That is where we can and should help.●

Sebastian Loew, architect and planner, writer and consultant

Walking and Cycling Strategies and Design Guidance: What's The Point?

11 September 2018, The Gallery, London

At this event Phil Jones of PJA provided an interesting insight into current advice from the Department for Transport on their Local Cycling and Walking Infrastructure Plans (LCWIP) programme. This was followed by fascinating data analysis from Naomi Baster, looking at Transport for London's research into the behaviours of pedestrians and cyclists in the capital, and the potential for growing the share of these modes. Finally, Brenda Puech of Living Streets adeptly stepped in at the last moment to give Councillor Feryal Demerci's presentation. This provided a more practical look at the types of walking and cycling interventions that the London Borough of Hackney Council are currently implementing.

One of the most interesting points made during the evening was by Phil Jones when he noted that the proportion of people who choose to walk when taking trips of a mile or less, hasn't changed greatly since the 1970s, a time when walking had a far higher mode share. It is nice to know that, given the numerous travel options people now have, and often including the use of a conveniently parked car, almost as many still choose to walk for these short trips as they did over 40 years ago. However, this suggests that the steady decline in the total number of walking trips being made is not due to a growing laziness on our part, but rather a desire or need to travel further as part of our daily lives.

This raises a couple of important questions. Firstly, and perhaps unsurprisingly, the primary answer to achieving greater walking mode share comes down to land use. Get the mix of uses right and people can very happily live a great deal of their lives relatively close to home, at which point walking becomes the obvious choice. However, live in a large residential estate where you must work, shop and socialise many miles from your home and, understandably, walking no longer seems such an attractive option.

If our goal is simply to increase walking's mode share, then it would appear that improving infrastructure will only provide

limited gains for those people who already have things to walk to. There are many other worthwhile and significant benefits to improving conditions for walking, but they would not appear to be quite as wide-ranging as many people hope it will be.

This was a thought-provoking evening, but for reasons that I didn't predict. We appear to be more than happy to walk short distances (even if the conditions are less than favourable). The problem is that many of us have very little that we can conveniently walk to. ●

Oli Davey, Transportation Design Engineer, Urban Movement

Electric vehicles – Infrastructure and Impact

11 October 2018, The Gallery, London

There was almost a full house for this joint event organised by the UDG with Living Streets, as campaigners, academics, professionals and businesses debated the shift towards electric vehicles (EVs). It brought a sharp and not uncritical focus on the issues associated with electric vehicles and everyone will have gone away with a better understanding as well as more questions.

Professor Frank Kelly of King's College London warned of the links between air pollution with increased hospital admissions, reduced birth weights and increased risk of dementia. He pointed out that no zero-emission vehicles exist. Some cars are zero-emission at the tailpipe, but brakes and tyres are responsible for pollution, and particulates increase with heavier battery weights. Bringing forward electric forms of public transport is a positive change and the TX5 electric taxis are a favourite for health and cleanliness.

Alan Hayes provided an engineer's comment to dampen enthusiasm for electric vehicles, highlighting their inconvenience and relative inefficiency relative to petrol and diesel. We are kidding ourselves about their serious limitations of range and charging times. Is it only the wealthy who are benefiting from EV subsidies? There are displaced impacts on countries supplying materials such as cobalt from Congo. Hydrogen fuel cell trams or cars would not need the same level of infrastructure.

Councillor Caroline Russell, London Assembly member and Green Party spokesperson on transport, emphasised how much was to be done urgently to decarbonise our transport systems. The fact that cash-strapped councils are earning money by installing EV charging points is influencing bad decisions; in principle she opposes the loss of public realm to sell fuel in this way.

The second half of the discussion looked at more technical aspects: parking and the car-sharing potential of EVs. Car-sharing advocates aim to offer an affordable version of car use while removing up to 10 privately-owned vehicles for every one in shared use. Susan Claris of Arup promoted her idea for on street 'parklets' as a flexible way of accommodating a range of vehicles, bikes and phone charging without compromising the footway. The City of London Corporation has expressed concerns about the over-provision of charging sites; their priority is off-street charging for freight vehicles and 300 electric taxis. Transport for London has a target of 80 per cent active travel use and wishes to see charging happen off-street too. London Borough of Kensington and Chelsea makes use of street lighting columns to provide charging points to avoid street clutter, but cars must have a meter. The British Parking Authority would prefer more charging off-street, but there are few incentives for local authorities and 70 per cent of them have no budget for EV charging points.

In discussion, a question was asked about whether technology could develop better rubber compounds and whether trams were better than electric buses. It was pointed out that solutions will vary by area. There was agreement that installing charging points within the footway is taking place inappropriately and damaging walkability, contrary to the objectives of the *London Plan*. It was also agreed that the focus must still be a shift to active travel with fewer vehicles. Cars are wasteful of space, being parked for 94-96 per cent of their lifespan! ●

Tim Hagyard, planning and urban design consultant

UDG visits to Stockholm and the Abruzzi

17 October 2018, The Gallery, London

Learning first-hand from Europe has long been part of the Urban Design Group's programme and in these uncertain times, study tours take on a new relevance. Most of the group's visits have been led by Alan Stones or Sebastian Loew, who joined up to report on this year's trips.

Sebastian's talk on Stockholm drew on contrasting aspects of the Swedish capital: the beauty of the city in its archipelago setting, the emphasis on high quality public housing, transport and environmental management, the legacy of Asplund, all so much to be expected. Less predictable were Stockholm's social and economic disparities, evident even to the casual visitor.

For a low-lying city, mitigating the effects of climate change has taken on a new urgency. Rising sea levels have prompted a massive civil engineering project to raise the level of the causeway at Slussen, to prevent the city's drinking water being contaminated by the brackish waters of the lagoon. The southern suburb of Hammerby Sjöstad has been celebrated as one of the first large-scale developments with ecology to the fore, and the group found it was wearing well after 20 years. Other outings were made to the brownfield site of Royal Seaport, the prototype new town of Vallingsby, and Hagestaden.

Brian Quinn added an interesting postscript to the Stockholm's trip, having stayed on to visit Vallastraden, a development begun in 2012 on the outskirts of the city of Linköping. The township had been built quickly and well with a commendable emphasis on renewable energy, but as a place it was harder to enjoy, being exceptionally dense with narrow streets, and uncomfortably windy.

Alan Stones reported on a longer, eight-day tour of the small towns of the Abruzzi region in central Italy (see his report on p.10). This wild and mountainous area is notorious for its seismic instability. This was all too apparent in the regional capital Aquila, undergoing the slow and painstaking reconstruction after the earthquake of 2009 which caused 308 deaths and the destruction of around 11,000 buildings. Quite apart from the physical and human cost, the economic life of the old town seemed to have been sapped, with much of the population being decanted to the suburbs where more modern construction had withstood the effects of the earthquake. Ascoli Piceno in the Marche region has a vibrant town centre, well preserved buildings and riverside setting which provided a poignant contrast with Aquila. The group also found time to visit some of smaller hill towns including Somona, Scanno, Angara del Abruzzi, Patrecho and Castel del Monte.

Having led some thirty European tours for the UDG, Alan had announced that Abruzzi would be his last in charge. It was now time for younger members to take over. UDG Director Robert Huxford closed the evening by thanking Alan and Thelma Stones for arranging so many outstanding and adventurous visits. ●

Geoffrey Noble, urban design and heritage consultant

City Image and City Life, Tim Pharoah

The Kevin Lynch Memorial Lecture, 14 November 2018, The Gallery, London

Tim Pharoah, winner of the UDG Lifetime Achievement Award 2018 appropriately organised his Kevin Lynch memorial lecture around the work of the author being commemorated. Lynch's *The Image of the City*, summarised as 'an empirical study of how people perceive the city' has had a tremendous influence on urban designers' thinking. Tim was one of those inspired by this book (and some others as well) and his lecture described the different stages of his career in to which Lynch had had an influence.

Interested and excited by urban environments as a young man, he discovered the works of Gordon Cullen (*Townscape*) and Lynch more or less simultaneously and they helped him understand and codify what up to then had just been a gut feeling. Soon he was involved in a successful campaign to save the stone paving of Edinburgh's Royal Mile. His next campaign was against a widening of the A1 in Berwick on Tweed, followed by a period of work in New Haven, Connecticut, applying Lynch's methodology to the perception of the urban environment from the road.

To place the period in which Lynch's ideas evolved, Tim listed four important trends of the post-war period: the utopian new towns of Corbusier and Wright, garden cities, the British New Towns and the urban motorways. At the same time, in the real world, inner cities were in decline and modernist design was replacing historic neighbourhoods with unattractive substitutes.

The 1960s were fertile ground for transformational publications; Jane Jacobs *Death and Life of Great American Cities* together with Michael Thompson's *Motorway London* were the next major influences on Tim. On the other hand, Buchanan's report *Traffic in Towns* was published, giving an impulse to the construction of urban motorways and increasing the menace to historic areas. Whilst working at the London School of Economics and later at Westminster City Council, Tim (using a pseudonym) campaigned against the destruction of some of the capital's neighbourhoods in the name of new motorways construction.

On a more optimistic note, Tim saw this century as being at last concerned with people and places, and showed some good examples of recent urban developments (King's Cross, Brighton's New Road). The problem now resides in the suburbs where so many new homes are being built without a sense of place or connections. Tim wondered whether the new NPPF would be able to respond to this situation.

Finally Tim attempted to evaluate Lynch's work in today's context: positive were the awareness of city structure and the possibility of influencing it and promoting quality. Negative were the difficulty of interpreting the methodology on the ground, the constrained definition of some of its elements and the fact that the methodology was not well known. An animated discussion followed about the current situation, the role of planners and highway engineers, and the accelerated rhythm of change. ●

Sebastian Loew

Urban Design Group's Annual General Meeting

The following is a summary of the Trustees' Report presented to the AGM.

FINANCIAL REVIEW 2017-18	2018 Totals £	2017 Totals £
INCOMING RESOURCES		
Subscriptions	96,075	113,410
Publications and Awards	8,842	10,291
Conference Fees and Sponsorship	18,975	17,163
London Events	2,456	1,040
Study Tours & Job Ads	41,170	45,599
Donation from Urban Design Services Ltd	0	0
Activities to Generate Funds		
Interest Received	32	315
Inland Revenue: Gift Aid	0	0
Miscellaneous Income	703	0
Total Incoming Resources	**168,253**	**187,818**
RESOURCES EXPENDED		
Charitable Expenditure		
Publications & Awards	36,584	38,193
Conference Expenditure	12,774	18,273
General	90,280	78,886
Study Tours Expenditure	22,284	25,296
Governance Costs (Accountancy)	2,753	2100
Total Resources Expended	**164,675**	**162,748**
Net Income/(Expenditure) For The Year	**3,578**	**25,070**
Fund Balances Brought Forward	**202,420**	**177,350**
Fund Balances Carried Forward	**205,998**	**202,420**
Current Assets	**218,879**	**220,890**
Current Liabilities	**12,881**	**18,471**
TOTAL NET ASSETS	**205,998**	**202,420**

MEMBERSHIP

The total number of members across the various categories has remained approximately constant at 1,179 (from 1,153 the previous year) with minor fluctuations within each category: an increase in individual and Recognised Practitioners, balanced by a decrease in practice, local authority and university memberships, although in all cases the numbers are very small. The take-up of the *Urban Update* e-bulletin by non-members remains high at 1,131.

URBAN DESIGN JOURNAL

Over the past year a number of high quality contributions were received on a variety of subjects, occasionally fairly controversial. The main topics covered were Estate Regeneration, Conservation and Urban Design, North America, and Post-Conflict Urban Design. Members are always encouraged to contact the editors to offer contributions or suggest subjects that they would like to see covered in future issues.

NATIONAL URBAN DESIGN AWARDS

Led by Nidhi Bhargava, Louise Thomas and the UDG Awards Group, this year's National Urban Design Awards event took place at Browns, Covent Garden in March 2018 and was very successful. The Francis Tibbalds Trust continued its generous support through the provision of financial prizes in the Practice Project and Student categories. The winners in 2018 were as follows:

- Practice Project Award: Chapman Taylor for Altstadtquartier Buchel, Aachen, Germany
- Public Sector Award: City of London Corporation for Aldgate
- Student Award: Chris Wiseman and Marc Miller, University of Strathclyde for Milton: Back from the Edge
- Book Award: *The Art of Building a Garden City: Designing New Communities for the 21st Century*, Kate Henderson, Katy Lock and Hugh Ellis, RIBA Publishing
- Lifetime Achievement Award: John Thorp, formerly Civic Architect at Leeds City Council
- Outstanding Contribution to Urban Design: Rowan Moore, author and journalist

NATIONAL CONFERENCE ON URBAN DESIGN 2017

The 2017 conference was held at the University of Manchester, under the title of 'Health, Happiness, Harmony: The Role of Urban Design'. Over 70 speakers contributed to the conference which included an opening address by Sir Richard Leese, Leader of Manchester City Council, and Deputy Mayor of Greater Manchester Combined Authority. The conference was generously sponsored by GreenBlue Urban, Boyer, Broadway Malyan, IBI, McCauls and Tibbalds.

EVENTS – LONDON

The UDG has continued to develop its programme of events at Cowcross Street. Led by Paul Reynolds, the 2017-2018 programme included presentations, a film night, and walks.

URBANNOUS – VIDEO ON DEMAND

Thanks are due to Fergus Carnegie who continues his largely voluntary work to record the UDG's monthly events at Cowcross Street, making them available to a global audience through the Urbannous website. This is a great resource and a tremendously valuable archive of the presentations given at the UDG over recent years.

UDG REGIONS

Colin Munsie as UDG Vice-Chair for the regions, worked to strengthen the group's links throughout the UK and beyond. The following are leading activities in their areas

- Solent: Peter Frankum
- East Midlands: Laura Alvarez
- North East: Georgia Giannopoulou
- North West: Mark Foster and Rebecca Newiss
- Scotland: Francis Newton and Jo White
- Yorkshire: Rob Thompson
- Wales: Noel Isherwood
- West Midlands: Michael Vout

URBAN DESIGN STUDY TOURS

In April 2017 Sebastian Loew led a tour to Vienna and Alan Stones led an extension of this tour to other Austrian cities. In April 2018, Sebastian Loew took a group to Stockholm and Alan Stones led another group to the Abruzzi towns in Italy.

RESEARCH PROJECT – DESIGN SKILLS IN LOCAL AUTHORITIES

Alan Stones negotiated a skills survey undertaken by Professor Matthew Carmona and Valentina Giordano at University College London. The survey demonstrated extensive skills shortages across local authorities. The results can be seen on the UDG website.

URBAN UPDATE

The UDG's email newsletter *Urban Update* continues to be a valuable resource for urban designers and is received by over 2,000 individuals. It provides a concise monitoring service of the government websites, as well as news of research in a wide range of areas.

EXECUTIVE COMMITTEE MEMBERS

The operation of the Urban Design Group is the responsibility of the Executive Committee. Its member for the year 2017-2018 were:

Colin Pullan (Chair)
Daniela Lucchese*
Leo Hammond (Hon Treasurer)
Katy Neaves (Past Chair)
Paul Reynolds (Hon Secretary)
Laura Alvarez*
Philip Cave
Michael Cowdy*
Andrew Dakin* (corresponding)
Stefan Kruczkowski* (corresponding)
Colin Munsie
Mat Procter*
Monica Qing*
Brian Quinn*
Amanda Reynolds
Raj Rooprai*
Barry Sellers
Katja Stille*
Graham Smith*
Alan Stones
Mattias Wunderlich

** Denotes that this member was co-opted to the Executive Committee for 2017-18* ●

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National Urban Design Conference 2018

Winchester, 20-22 September

EXPANDING TOWNS AND SMALLER CITIES

This year Urban Design Group's conference shifted the focus to towns and smaller settlements. Winchester, with its magnificent Victorian Guildhall to host us and a town centre still reflecting both Roman and Saxon grid plans, was a good choice to consider urban design matters at a different scale.

URBAN DESIGN FEST

On the first evening, Councillor Horrill, leader of Winchester City Council welcomed attendees to the heritage of Winchester, before a wide-ranging series of punchy four minute urban design talks. Later, Terence O'Rourke, author of the 2015 *Cathedral Cities in Crisis* report, reflected that the strategic dimension needed to be right first, but that central government was chaotic at present and the dust of Brexit needed to settle. Andrew Cameron restated his belief in the *Joy of Streets*, but lamented that the government hadn't taken its suggestions on *Manual for Streets*. He reported ongoing success at the sometimes maligned architectural odyssey of Poundbury, where 2,300 jobs are now within this lively urban extension of 1,500 homes, offering less travel and a better quality of life. Building beautiful places, he concluded, is the key to sustainability as they will endure. Chris Sharpe of Holistic City Software challenged the audience to define the term Smartcities, and then exposed a range of definitions to the point where the term becomes meaningless. Technology is not to be used for its own sake but in applications, like Placecheck, where we can quickly build up a body of understanding about people's own experiences and ideas. As we already have plenty of data, its quality and how to analyse it are more important.

MAIN CONFERENCE

The day was divided into themes of Movement and Public Realm, Leadership and Governance, Development within Towns and Development outside Towns.

Howard Gray for GreenBlue Infrastructure, co-sponsors of the conference, pointed out that climate change is happening now and that the loss of a single mature tree requires 68 young trees to replace it, in terms of its canopy cover. His company's message continues to be that green infrastructure provides the best sustainable development.

Marcus Adams of JTP set out the background to a new SPD for the Central Winchester Regeneration Area, following public protests against 2014 plans. 1,400 people were involved in a busy weekend of interactive workshops to develop policies for the area, providing a framework for new development, greater permeability, the retention of key buildings, public realm improvements, opening up culverted rivers and a landscaped setting for the statue of King Alfred. The City Council's land ownership will be a big factor in delivering the plans.

Peter Frankum of Savills gave an overview of the South Hampshire strategic context: the legacy of the 1965 modernist Buchanan proposals for Solent City, albeit abandoned, is evident along the M27 corridor, but implemented in a more sensitive manner with adaptable grids, and some stylish schemes.

Rob Cowan of Urban Design Skills declared that he really wanted to address all the planners and urban designers who hadn't come along to the conference. Never short of a good slide, Rob's back catalogue of laughably absurd highway and planning outcomes seems to grow. He highlighted a Carbuncle Cup winner in Woolwich Central, a scheme openly regretted by the chairman of the planning board that had approved it, but which had previously been design reviewed. Unfortunately, all the points of qualification from the design review were overlooked in its implementation.

Amanda Reynolds drew upon her work in King's Lynn and Ipswich to highlight the waste of 'heritage car parks'. Surface parking takes valuable space that could instead contribute to towns in creating places.

LEADERSHIP AND GOVERNANCE

Laura Alvarez of Nottingham City Council spoke about her wide experience of consultation to emphasise the negativity of key parties. Developers see consultation as a tick-box exercise; planning authorities lack the resources and skills to engage properly; and, the public's attitude can be very cynical. She encouraged communities to take the initiative and join forces with others in the knowledge that they can have an influence; authorities to employ staff with the correct skills; and, developers to embed collaborative working in their sustainability strategies.

Ivan Tennant of AECOM referred to several cases where his practice worked with groups to produce Neighbourhood Plans, now well established and gathering pace. It was important to understand the real issues underlying objections to development. Older people's housing is one example of a niche area that can be promoted successfully.

On the basis of his long association with planning in the market town of Hertford, Tim Hagyard noted that decisions were too focused on-site allocations or on the priorities of councillors. With investment in officer training, design review and design frameworks, there had been progress on urban design quality and inputs. The Mead Lane Framework facilitated greater sustainable travel and a higher density approach around a local station; more recently, public involvement helped to shape a town centre urban design strategy to inform the redevelopment of the town's main shopping centre, including the transformation of a neglected riverside area.

Catherine Hammant's PhD on *Public Realm Transformations in Market Towns* referred to schemes within Stamford, the country's first Conservation Area. The lack of national guidance on the process for public realm schemes is evident, particularly on highways statutory provisions. She regretted that *Manual for Streets* hadn't been made compulsory and the demise of both the Action for Market Towns and CABE as vehicles to develop thinking.

MOVEMENT AND PUBLIC REALM

Luan Deda of Boyer Planning opened this session focusing on key elements of good public realm. Chris Martin of Urban Movement highlighted the importance of design to make people healthier and happier, and unlock all the advantages of urban living. He

detailed an innovative set of principles that set out how we can shape towns and cities to flourish.

Stephen O'Malley of Civic Engineers explained that towns were the physical manifestation of public policy, developed and led by elected representatives, and delivered by the statutory executive. He suggested that we needed to get much better at achieving the optimum outcomes when considering public health, inclusive growth, social value, inward investment and environmental impact. Engineers have a critical role to play in interpreting these objectives and unlocking meaningful additional value in the built and natural environment.

Andy Ward of NEW Masterplanning referred to case studies in towns in the south of England, explaining their macro-planning approach which aims to create better places, increase commercial value, reduce infrastructure costs and secure earlier planning permissions.

DEVELOPMENT WITHIN THE TOWN

Jane Manning of Allies and Morrison detailed their work on density for the *London Plan*, showing it to be about far more than numbers than numbers but defining character areas which can reinforce future design strategy. Previous density guidelines for London were too blunt a tool. Street morphology and grain can be used to inform growth, and floor area ratios could be doubled and character still retained. The streets of London and the city's green infrastructure are safeguarded by this approach.

Retailing was the subject of two successive presentations. Paul Clements of Savills had stark words about the challenges for retailers in town centres, people are using town centres and their attachment to spaces and places remains, although this position is precarious. Innovation is needed and merely waiting for a retail cycle to improve matters is not enough. An example of innovation and mutual benefit was the relocation of a medical centre into a declining shopping mall in Nashville. Paul McTernan of SLR continued the theme of concern about towns and particularly dysfunctional large floor plate retail spaces. Referencing his work in Paisley, he showed how creating a learning and manufacturing space using the history of the Paisley shawl, was bringing investment and jobs.

DEVELOPMENT AND CHANGE OUTSIDE THE TOWN

Richard Eastham of Feria Urbanism highlighted how the study of an existing town centre and the organic growth of a town can inform the design of an urban extension. His talk, illustrated by historic records and quotes, explained how their work aims to ensure that the town retains ingrained characteristics following future growth.

Annalie Riches of Mihail Riches presented Velocity, a growth strategy for the Oxford-Cambridge corridor. Velocity, the winning entry of the National Infrastructure Competition, offers radical and inspiring ideas for 21st century sustainable living, as one way to build distinctive new communities and deliver sustainable growth, designed around a car-free environment and high-density housing typologies.

Kim Swallowe of Cherwell District Council gave a talk about Graven Hill, England's largest custom build development currently under way. She explained how simple plot-passports provide self-builders with instructions and provide essential, yet minimal, design control.

SHAPING THE TOWN TO COME

The final session involved looking ahead. Ananya Bannerjee of Boyer Planning showed how an old hospital site at Alton would be developed with a landscape-defined design strategy to create a distinctive place.

Mark Hines of Mark Hines Architects, wishing to see greater local distinctiveness in new developments, pointed to the meaning and the sense of belonging brought by a clear identity, derived historically from the landscape. Working closely with customers and using the process of custom building may be a good vehicle for local distinctiveness; a 21st century Poundbury can evolve, including the necessary irregularity.

Finally, Roger Evans of Studio REAL asked why so much of what we do is not as good as what is shown at a conference. The planning regime of land allocation is a key strategic level decision, failing at present with sites chosen for the wrong reasons, and often not the best connected. Every town needs a strategic framework; Roger was promoting the idea of whole town visions and aiming to set up a few volunteer panels of urban designers to work with local authorities on their strategic allocations for towns and cities.

Following questions, the new chair of the Urban Design Group, Leo Hammond thanked the hosts, organisers and presenters, and encouraged everyone to continue working to make urban design our priority.

WALKING TOURS

On Saturday, for those fortunate enough to be there, an excellent guided tour of Winchester Cathedral was provided by its archaeologist, Dr John Crook, who not only set out the evolution of the building and the wider site, as if he had witnessed it himself, but was versed in all the differing materials, fashions and structural challenges of building the cathedral. A damp walk around the town, led by Rachel William of UBU, completed the morning, viewing some of the town's infill and public realm schemes as well as evident traffic conflicts.

CONCLUSIONS

Once again, the conference encouraged all with fine examples and demonstrated the value of urban design skills and collaborative working. The question of political leadership

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and the distracted state of national politics cannot be ignored at present. Following best practice and bringing it into the mainstream of planning and development remains a key task as always. The challenges of retail decline and lifestyle changes are especially acute for smaller settlements. Citizens' engagement such as in Winchester, and evidence of direct local government investment in commercial property, may offer new opportunities. Good urban design needs to be a priority for smaller towns and cities, where the public demand for involvement and quality is great, but the lack of local authorities resources frustrate it. Grappling with a historic legacy of limited public transport and damaging car-based solutions makes the challenge greater. In such a context, lifting the standards and distinctiveness of new development requires new leadership skills and priorities, and while much good work continues, it happens too often in isolation.

There is a palpable lack of priority or leadership, given the distractions of government and the absence of key bodies such as CABE that championed design. An announcement that local government budgets are to be further cut by a third does not augur well. ●

Tim Hagyard

1 A well attended conference
2 The Broadway, Winchester, soon to be redesigned as part of the Central Winchester Regeneration Area
3 Roger Evans giving the final address of the day

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The Urban Design Group goes global in Guangzhou

The UDG's Executive Committee reports on a recent delegation to China

For a number of years, the UDG Executive Committee has talked about trying to strengthen its links beyond the UK. As an organisation with members all around the world, and with many international students choosing to study urban design at UK universities, we have often felt that there was more that we could do. A number of ideas, such as translating the journal into other languages (i.e. Chinese), have been explored in the past but have never been taken forward.

However, after a long incubation period, the start of September saw a delegation from the UDG Executive Committee head to China to take part in a week-long knowledge exchange visit to the city of Guangzhou. The trip came about after a chance meeting at King's Cross between Executive member Monica Qing and a former college friend Mr Xu Lige, who is now the Director of the Guangzhou Planning and Design Studio (GZUPDS). After Monica introduced the UDG, he asked if we would be willing to send a small delegation to share experience and knowledge on key urban design challenges facing his team of around 200 staff. What followed was more than a year of dialogue and hard work between Monica and our hosts to set up the visit and ensure that two organisations located in different parts of the world could best benefit from this knowledge exchange.

GUANGZHOU CITY

Situated in the southern province of Guangdong, the city of Guangzhou sits at the head of the Pearl River and is one of the key cities of the Pearl River Delta – a region recognised by the World Bank as the largest urban area in the world, with a combined population of more than 60 million inhabitants. The city itself has a population of around 13 million, making it the third largest city in China, and one of the top 20 globally. It is a city of diverse architecture, including a number of significant historical buildings such as the Chigang Pagoda (which dates from 1619) alongside modern contemporary ones like Zaha Hadid's Opera House which opened in 2010.

Formerly known as Canton, the city has a history of over 2,200 years and was a major terminus of the famous Silk Road maritime trading route. For many years, it was the only Chinese port accessible to foreign traders and as such a major focus during the first Opium war, a 2-year battle between the Qing Dynasty and British forces which saw many of its native population leave, and ended with Hong Kong, another of the Pearl River Delta cities, being ceded to the British. The impact of this history is visible in the design of the city today, as many of those who fled during the war returned with money made overseas and started to build properties and districts stylistically resembling what they had seen while in exile. To this day there are neighbourhoods which have clear influences from American, Dutch, French and even British Colonial architectural styles.

Guangzhou continues to play an important role in China's Belt and Road initiative reaching out to many countries. In October 2018 Guangzhou staged China's largest Trade Fair underlining its economic importance. The number of firms from countries and regions along the Belt and Road made up around 60 percent of the total participants at the event.

THE UDG VISIT

After arriving in Guangzhou by train from Hong Kong, the UDG team comprising Colin Pullan, Paul Reynolds, Mike Cowdy and Barry Sellers headed to the hotel where they met Monica Qing. The hotel was located in the Zhujiang New Town, an area planned as Guangzhou's new CBD for the 21st century, which was started in the mid 2000s, ahead of the city's hosting of the 2010 Asian Games. Today it is home to a number of the city's most iconic buildings, including the Canton Tower, the second tallest tower in the world.

Our first stop was the GZPUDS riverfront office to meet our hosts, get an overview of the schedule for the rest of the week and a brief introduction to the city, its history and development. This was followed by dinner at the Party Pier, a fantastic piece of stakeholder-initiated and community-led riverside regeneration of a former grain silo pier belonging to Pearl River Brewery. It is described as a 'beer, culture and art zone'.

THE SPA TOWN

Our first full day began with a trip to a spa town in the hills north of the city. On the long drive we were given some background information to the project: a comprehensive masterplan had been drawn up for the town several years earlier, but only an initial phase of public realm improvements had been completed, and our task was to look at the town with fresh eyes and hopefully come up with some new ideas. What we found was a small, quiet town which had clearly benefitted from its natural assets, such as the hot springs and river, but had passed its heyday. Despite extensive public realm improvements in a bid to rejuvenate its tourism potential, it was still suffering from a dominance of highways, and often with quite poor buildings behind a new veneer of development. The town was also incredibly quiet out of season when we visited. In many ways it reminded the team of an English seaside town in winter, although in this case summer is the quiet season, due to the extreme heat.

Walking around we discovered some real gems, in terms of spaces and buildings, but often they were hidden away from the main streets and spaces. We felt that their value was not necessarily seen or understood. The town was also cut off from the river in many places. While a new promenade built as part of the public realm project improved access in parts, new developments blocked key views and desire lines, and a major road separated the promenade from the rest of the town.

THE HIGH SPEED STATION

On the second day we headed out of the city centre again, but only as far as the Guangzhou South High Speed Rail Station. This is the major high-speed terminus for the city

and a wide catchment area beyond and was designed by Terry Farrell & Partners. When it opened in 2010, it was the largest station in Asia, designed to accommodate up to 300,000 passengers a day. We visited on a relatively quiet day, and it is hard to imagine what it is like during the peak season such as China's Spring festival when millions of migrant workers heading home converge here.

The station is without doubt an impressive building, six storeys high and with a vertical organisation structure which separates departing, arriving and interchanging passengers. It is also elevated and visible from a considerable distance around, even though it sits 17km outside of the city centre. We could see how the city was approaching it at pace, and the station itself is the centrepiece of a major new masterplanned district, designed to deliver a mix of uses that take advantage of their proximity to the regional transport hub. GZPUDS has already been working with the rail authority to increase its capacity for the projected growth. Its scale does however bring some challenges, and we found that there was a significant amount of retrofitted signage and wayfinding which had been installed to help people find their way around, dealing with what we were told was a major problem of legibility. Also, there was a lack of integration with taxis and buses resulting in serious congestion in certain parts of the station precinct. After the site visit, we had a productive workshop with the project team in GZPUDS's office where the station design and infrastructure-led urban expansion were discussed as two separate topics.

THE OLD TOWN

The third of our visits was described to us as being all about the old town, but in reality, it was a story of regeneration that could have just as easily have come from the streets of east London. We were taken to Julong Village, probably one of Guangzhou's best examples of a traditional southern Chinese neighbourhood. Despite the massive changes brought by economic development in the surrounding areas, only around 100 people still reside in Julong Village (the same as it has been for the past 120 years), which contains some of the best-preserved late Qing Dynasty architecture in the region, making it Guangzhou's premier historical and cultural preservation district. However, it is also close to a new metro station which brings with it pressures of high-density redevelopment in the vicinity. Interestingly, it sits on a canal corridor which flanks a number of now derelict industrial sites, including what was once one of the largest diesel engine factories in China, but is fast becoming a burgeoning arts district, like so many similar industrial areas around the world.

Following the visit, we again had a workshop session, discussing how such an area can maximise the potential brought by the new metro without compromising the heritage of the Julong Village or the potential of the emerging arts quarter.

'CAN TALK' CONFERENCE

Our final day in Guangzhou was taken up by the 'Can-Talk' conference, a one-day event with around 75 participants. Colin started the day by giving an overview of the UDG and the value of urban design. Other members of the group took turns to speak on a variety of topics, including How to make a city walkable, International best practice case studies, Achieving high quality urban design through the planning system, and Regeneration best practice, focussing on King's Cross, where this whole visit was conceived. We also heard from local speakers about urban design practice and policy in Guangzhou. Following the presentations, there was an open Q&A session where many of the questions focussed on how to retain heritage assets in regeneration, and how to work in partnership with local communities.

After the conference we were given a tour of the venue, the spectacular new Guangzhou Urban Planning Exhibition Centre. This type of facility is very popular in China, combining an element of city history with information on the future of the city. They describe it as an 'urban culture living room' for the city, where ordinary citizens and visitors can experience the city's planning and growth. The scale of the building and exhibits was incomparable to anything in the UK, with a vast model of the city and a 4D theatre that shows the story of the development of the city while the audience sits in moving seats, and is confronted with noises and smells from the past. It was quite an ending to our stay in this amazing city.

NEXT STEPS

We see this as the first of what we hope will become a series of visits to Guangzhou and other Chinese cities, and already early discussions have been held about a return trip in 2019, along with the possibility of hosting a delegation from China in London. We also hope to investigate the possibility of making similar visits to other cities around the world, allowing our members to share

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their collective knowledge beyond the UK. Once we have further details of future trips or events, we will share details on the UDG website and in *Urban Update*.

We also look forward to sharing more information about the trip, what we learned, and how we hope to grow our influence and membership in China, with a special journal supplement next year, and an evening event to talk a little more about our experiences in Guangzhou at the Gallery on 19th February. Please make a note in your diary, and we look forward to seeing you there. ●

Barry Sellers, Colin Pullan, Mike Cowdy, Monica Qing & Paul Reynolds

1 View from GZPUDS riverfront office
2 The traditional Julong VIllage
3 The UDG team and hosts in the Old Town workshop

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UDG Study Tour: The Abruzzi, 9—17 June 2018

Forty one Urban Design Group members set off from London to visit the Abruzzi, a wild, mountainous region of central Italy, home to a number of spectacular hill towns, but also a region affected by a number of disastrous earthquakes.

For the first part of our tour we were based in the small city of Sulmona, which sits on a plain surrounded by bleak mountains. Its prosperity is due to its role as a railway junction, to the manufacturing of jewellery and sugared almonds. It is also famous as the home of the Roman poet Ovid. It suffered a damaging earthquake in 1706, but was rebuilt on the medieval street grid. A number of key monuments were also rebuilt, notably a medieval aqueduct and the splendid Annunziata, a late medieval hospital and grain store with an amazing sculptured façade.

We visited a number of well-preserved small towns relatively unaffected by earthquakes. Scanno owed its prosperity to the wool trade, and retains some fine and substantial merchants' houses. It is perched above a gorge, and its narrow streets are populated thanks to tourism and the availability of local employment. It is also famous for the 1953 photos of locals in distinctive heavy woollen peasant costumes by Henri Cartier-Bresson. Barrea, a much smaller place centred on a castle, would have remained unremarkable had its setting not been enhanced by the creation of a huge lake by the damming of the River Sangro.

Many of the small towns in the region cluster around a castle. Pacentro's castle was built by the powerful Cantelmo family in the 14th century, and it and the town were enlarged in the 15th century. Pettorano sul Gizio's castle was also built by the Cantelmos and the town has wonderful and lengthy pedestrian routes punctuated by small squares with arched entrances.

The Aterno valley, which runs between Sulmona and L'Aquila, seems to form a boundary between the areas affected and unaffected by damage from the massive 2009 earthquake. Both Pietracamela and Castel del Monte on the heights of the Gran Sasso are attractive hill towns ranking amongst the *borghi i più belli d'Italia*. However their medieval core areas are propped up by braces and shores and dominated by tower cranes. Very few of the houses in these centres have been restored to habitable use nine years after the earthquake. The fact that many were holiday homes fortunately meant that there were few casualties at the time, but the state of the economy has delayed reconstruction, in spite of the fact that local loyalty has committed the authorities to undertake it. A boost was given to Castel del Monte by its use as a location for George Clooney's 2010 film *The American*.

The city of L'Aquila was founded in 1242 by the Holy Roman Emperor Frederick II, who forced the population of 99 Abruzzese villages to relocate there. Each village built its own church, piazza and quarter, and the number 99 is commemorated in the number of spouts on a fountain and the number of midnight chimes on the town hall clock. Frederick chose a site that has since undergone nine major earthquakes in its history. In 1703 that resulted in wholesale destruction, but rebuilding produced a lively, bustling city that had reached a population of 64,000 by the time of the 2009 disastrous quake. That fateful event saw much of the historic centre reduced to rubble, with 308 deaths, 11,000 buildings damaged or destroyed, and 65,000 people rendered homeless throughout the province. The effect was greater than it should have been due to the substandard construction of some modern buildings.

The initial response was effective in terms of rehousing the displaced in suburban prefabricated buildings, but the reconstruction of the historic centre was off to a chaotic start, with suspected Camorra involvement in building contracts. In response, the government set up a monitoring organisation, the Ufficio Speciale per la Ricostruzione dell'Aquila. Dr Ing Sergio Sulpizii spoke to our group and explained the monitoring process, which controls all contracts, public and private, down to the composition and quantity of materials used and waste removed. So far work on 8,000 building sites has been completed with 600 still underway. To-date €5.5bn has been spent by the private sector and €1.4bn by the public.

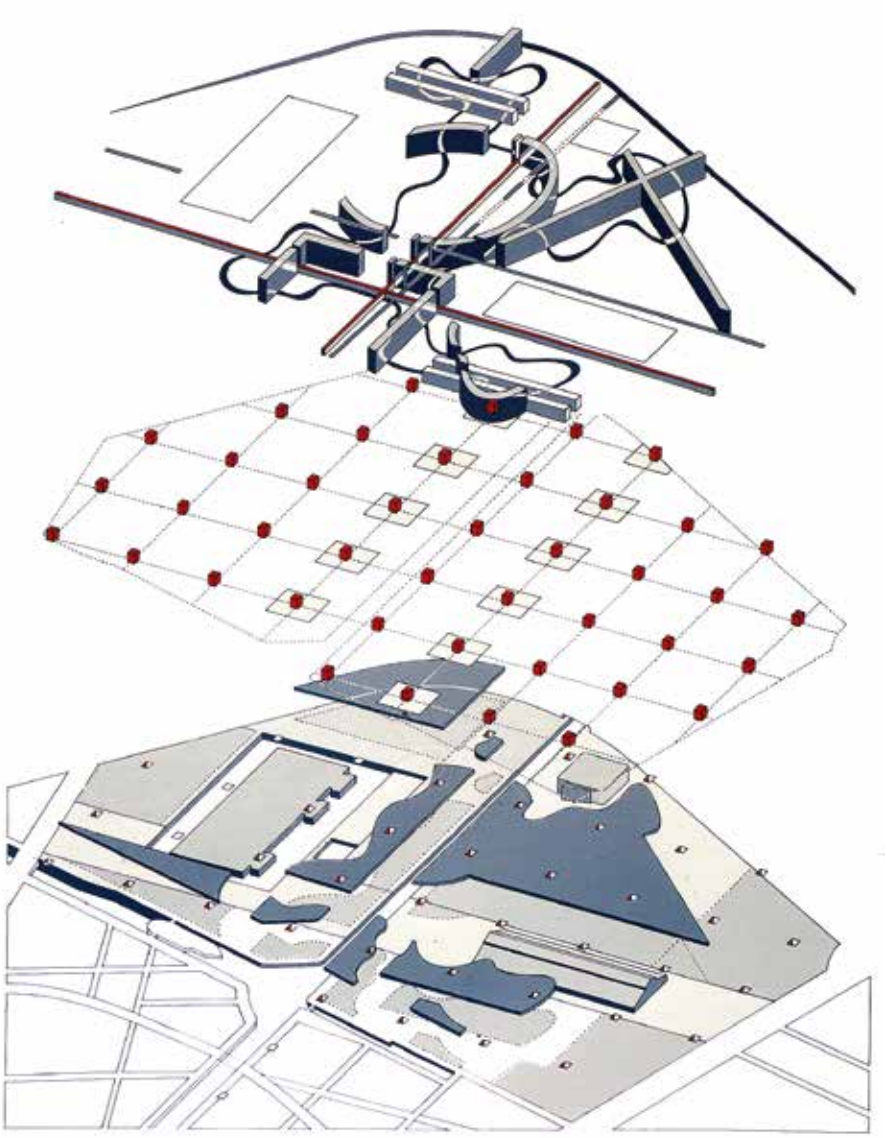
Walking around the centre, it was apparent that many buildings were still strapped together with external steelwork, whilst others were shrouded nearing completion. Dr.Sulpizii explained that heritage protection precludes the insertion of earthquake-proof steel frames, but it is possible to thicken the masonry of historic buildings. It was also apparent that the re-colonisation of the historic centre is a very slow process, as commercial and residential activity has relocated to the suburbs. Encouraging people to live and work in the reconstructed centre and re-orienting the transport system to underpin this process will be the task of the coming decades. The process has been helped by many restored buildings being taken over by the local university.

Our tour ended in Ascoli Piceno, a busy historic city with a population of 49,000, which gave us a glimpse of what L'Aquila had been and what it might become again. Ascoli is just over the border in the Marche region, which suffered its own earthquake in 2016, but the city itself escaped relatively unscathed. The contrast with L'Aquila is striking. A chain of superb squares is the focus of the city's life. The Piazza del Popolo is fronted by 16th century loggias and the fine medieval Palazzo del Capitano del Popolo, whilst the elongated Piazza Arringo is the focus for the baroque cathedral and Palazzo del Comune. The city retains its medieval walls and overhangs the gorge of the River Tronto.

Altogether the tour brought home to us the fragility of urban life, and how, once it has been disrupted or destroyed, its revival can be a painstakingly slow and dispiriting process. ●

Alan Stones architect-planner, urban design consultant and former Head of Design at Essex County Council

1 Scanno wool town
2 Barrea enhanced by an artificial lake
3 L'Aquila main square with tower cranes and many buildings still under wraps



CURRENT POSITION
Director and Co-founder of Define

Experience
Previously Design Director at Lovejoy and Managing Director Capita Lovejoy Birmingham

Education
BA Hons and Diploma in Landscape Architecture, Birmingham City University
Diploma in Urban Design, Oxford Brookes University

Specialisms
Leading the vision, design and delivery of large scale new communities and urban regeneration, tall building projects, preparing urban design and townscape audits and acting as expert witness

Ambitions
To see 'Copenhagenisation' principles applied undiluted in a UK new community project

My Favourite Plan: Andy Williams

Parc de la Villette, Paris, ©Bernard Tschumi Architects

WHY I LIKE IT...

I first became aware of Bernard Tschumi's Parc de la Villette in 1994 in the second year of my BA in Landscape Architecture. The course gave great weight to place-specific design and the importance of a strong design concept, an emphasis that remains today. I recall that the whole year group spent a great deal of time exploring individual ideas, but often struggled to prepare final masterplans that reflected our individual place-specific concepts, and were notably different from each other. Around this time I became aware of Tschumi's design for Parc de la Villette. I was immediately struck by the combination of the strength and clarity in the concept, and how the design was communicated almost as a seamless extension of the concept whilst being fresh, enticing and delivered with the simplicity that we were all trying and failing to achieve at that time.

Parc de la Villette was one of French President Francois Mitterrand's *Grands Projets*, and involved the regeneration of a 55 ha former abattoir site to the north east of Paris city centre, to create an urban park as a cultural centre, including a science museum and exhibition hall. Bernard Tschumi won the international design competition in 1983, with the park being substantially complete by 1987, although since its completion the range of cultural facilities has significantly grown. The design concept for the park explored the deconstruction of space and object to allow accidental relationships, intentionally being the antithesis of the more composed, picturesque approach to landscape design. It achieved this through the non-composed overlaying of three layers, referred to as the lines (that represented key movement routes, both direct and 'cinematic'), points (relating to the striking red follies laid out on a rigid grid that created steps up and down from different planes) and surfaces (reflecting different spaces, activities and buildings).

The way in which Bernard Tschumi's design approach was communicated through its 'line, point and surface' layers was a strong influence on me, and has remained a useful reference ever since. Looking back I can't help but notice over much of my professional work that exploring and communicating the layers of a design has been a common graphic technique, although perhaps not as integral to the design concept as Bernard Tschumi's.

WHAT TO LEARN FROM IT...

This plan acts as a useful reminder that graphic communication should almost always be simple, visually enticing, and use as few words as possible (if any) to describe it. It also highlights that a plan can benefit from not being two dimensional, and provides proof that fully aligning a design concept with the plan is possible after all. ●

Urban Design Library #28

Defensible Space, Crime Prevention through Urban Design, Oscar Newman, published by The Macmillan Company, New York, 1972

When first published, Newman's book made a big splash. It was received positively as a fresh approach to combat urban crime, as well as negatively as a new form of architectural determinism. Although read much less today, it still causes controversy. A few months ago I read in Anne Minton's *Big Capital, Who is London for?* that Newman's book was a sort of neo-conservative conspiracy and at the origins of demolition of social housing in both the US and the UK. Minton also blamed it for 'high-security housing estates where gates, grilles and forbidding high fences have become the norm'. Re-reading it now, I wonder whether Minton has in fact read the whole book.

Defensible Space has to be placed in its context: American cities, and New York in particular, had an unprecedented crime rate and the middle classes were fleeing to the suburbs, leaving behind those sectors of the population that couldn't move, mostly social housing tenants, or the affluent who could afford well-guarded apartments. Newman acknowledged that the problems were socio-economic and that communities in large urban areas were breaking down. His suggestions, based on years of research at New York University, may seem naïve and somewhat out-dated, but they do not include demolition and they are aimed principally at helping those trapped in inner-city social housing estates.

Newman's first chapter defines the problem as one of a loss of shared values in communities living in anonymous places, resulting in their inability to 'come together in joint action'. A rise in crime led to increased police action, but this was not a solution. Instead, Newman suggests that we have to help people to act together and that design can play a role in making this happen. 'A defensible space is a living residential environment which can be employed by inhabitants for the enhancement of their lives, while providing security for their families neighbors and friends'. He then describes where defensible space can be applied, from the layout of a whole estate, the relationship between buildings and between these and the surrounding area, to entrances of the buildings and inner circulation both vertical and horizontal. He argues that the problems have been created to a large extent by misplaced economies and by the loss of traditional approaches to urban design. Returning to first principles will go a long way to solving the problems although Newman acknowledges that crime will not be eliminated by design alone and may even migrate to other areas.

Chapter two analyses the problem in more detail and concentrates on the buildings themselves. The tall slab buildings with one main entrance, long interior corridors and two or more escape stairwells, are found to be the most difficult to survey; buildings with several entries serving a small number of flats facilitate natural surveillance.

Next, the book considers four relevant aspects of defensible space. The first is territoriality or the creation of areas over which the inhabitants have 'the ability to assume territorial attitudes and prerogatives'. The second, natural surveillance, requires the design to allow inhabitants to survey the public areas (in- and outdoors) around their homes. The third relates to the image of the development, in particular the stigma associated with social housing estates which Newman suggests is emphasised by their design that separates them from their surroundings. The final one follows from it and is about the juxtaposition of safe and unsafe areas: a well used and overlooked public open space, as opposed to a large one that cannot be overlooked. Most of the above would have been approved by Jane Jacobs and it seems peculiar that while she is considered a saint, Newman is viewed as a demon by many.

Chapter six covers a number of examples of (then) recent housing developments that conform with Newman's ideas of defensible space. He analyses in detail their internal and external layouts and points out the elements that improve safety or detract from it. Many of his comments would not be out of place in a design review report for a British project, for instance the praise for dwellings having doors directly on the street, or for play areas overlooked by surrounding flats. The next chapter offers ways of making existing schemes safer through modifications to their design. Residents were consulted to find out what they feared and how they would like to increase security in their home environment. Solutions were partly cosmetic and partly included a more fundamental redesign of the projects' grounds and interiors. Interestingly, the suggestions include the use of electronic devices, a technological innovation in its infancy at the time.

The last chapter, Summary and Recommendations, acknowledges that more research is needed and intended, and includes the following proviso: 'We are concerned that some might read into our work the implication that architectural design can have a direct causal effect on social interactions. Architecture operates more in the area of "influence" than control'.

The schemes analysed are typical of the US public housing in mid-century. The recommendations are not to be translated blindly to a country with similar but different problems, traditions and culture. Times have changed and crime isn't the same problem it was in the 1970s; inner cities are no longer being abandoned and the middle classes are moving back into them whilst suburbs show signs of decline. Moreover, technology has fundamentally changed both surveillance (CCTV is now ubiquitous and has replaced other forms of surveillance) and criminality as social media helps both the perpetrators and the surveyors. At the same time communities are no more coherent than they were then; they may be even less so.

What can be retained from *Defensible Space* is the sensitive approach to inhabitants (something Anne Minton seems to have overlooked), the careful research both in terms of design and in the analysis of police records, the consultation with a variety of stakeholders and the modesty of the solutions offered. They are mostly an extension of Jacobs' 'eyes on the street'. What we consider good urban design today incorporates many of Newman's ideas: legibility, permeability, public-private differentiation; these may not have been his words, but they follow on from his suggestions.

On the down side, it is true that Newman's ideas have been misappropriated to justify gated communities, fences and barriers, the elimination of some landscaping that could hide those with bad intentions and even the demolition of buildings that could have been retained. He himself complained that people such as Alice Coleman had used his ideas inconsistently.

On a more pedestrian level, the presentation of the book also reflects its age: the black and white photographs are pretty dull and in some cases unhelpful, the drawings not always clear, and the tables and graphs heavy-going. That shouldn't detract from a fundamentally well-intentioned text which was far-sighted for its time. There isn't very much in it but what there is, is worth digesting. ●

Sebastian Loew

Read On

Jane Jacobs, 1961, *Death and Life of Great American Cities*, Random House
Alice Coleman1985, *Utopia on Trial*, Hilary Shipman Ltd
Anne Minton, 2017, *Big Capital, Who is London for?*, Penguin

Place Pompidou, Paris

A once divisive (and now much loved) cultural institution and public space in the heart of Paris

In use: The design maintains a classical relationship between the civic building and the piazza that it frames. The generosity of the public space is remarkable as a proportion of the overall plot.

Details: Traditional materials have been used for the square with cobble stones set in fan patterns. This is in contrast to the modern building and imposing sculptural vents arranged along the perimeter of the square.

In each issue of Behind the Image, one of our contributors visits a modern public space from around the world. The photography tries to reveal an alternative perspective on a familiar precedent, famous space or place. These images illustrate how the public space works in practice: exploring its features (designed and unintended), and the way it relates to the surrounding context. ●

Lionel Eid, George Garofalakis, Rosie Garvey and Alice Raggett

Flexibility: Looking down onto the square from inside the building illustrates the lack of street furniture or planned elements within the space. This approach enables flexibility, allowing the square to be adapted for play, socialising, demonstration or events.

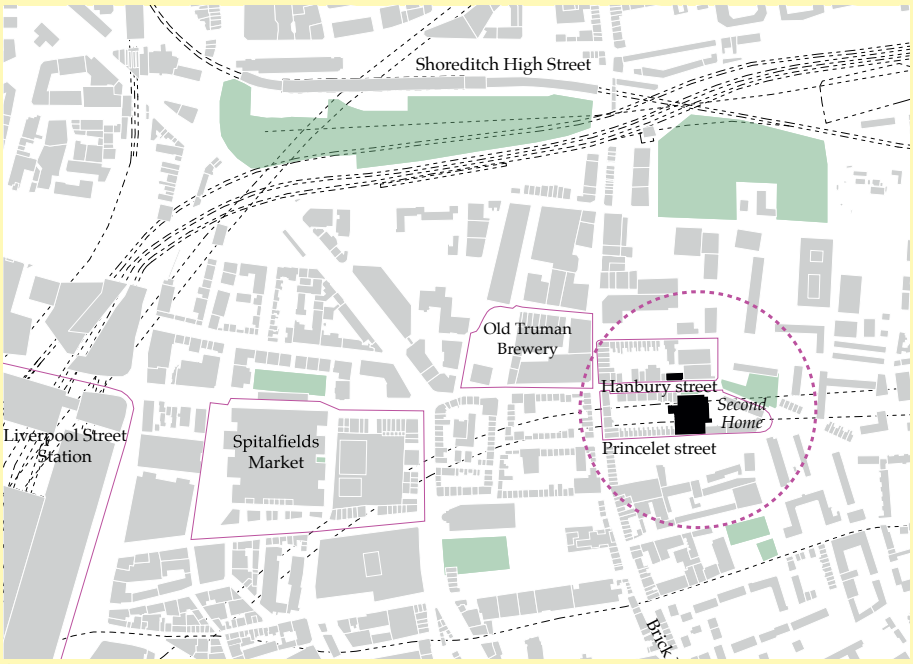
Use of topography: The slope of the square creates an amphitheatre effect between building and space. The gentle angle makes it more comfortable to sit and encourages groups to congregate.

Thresholds: The square has a clear yet porous edge with Rue Saint-Martin using bollards and tree planting. Blank walls and level changes separate the central space from the its lateral edges.

Reflection: Escalators and entrance doors are no longer free to enter without security checks, making the façade of the building less permeable. This diminishes the interactive relationship between the Pompidou and the life of the city outside; a connection that was an important aspect of the project's original design intent.

Co-working Space as New Urban Chance

Irene Manzini Ceinar explores the tactics and processes to unlock the potential of a co-working space at the urban level



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The transition from industrial Fordism of mass production to the post-Fordism economic model has deeply marked a change in terms of economic production, and in particular a shift in the working structure system.

One of the consequences of globalisation is the weakening of traditional class-based social spaces that historically facilitated associational ties and fostered collective forms of identity, such as the collaborative structure of the office. In particular, in Europe, the collapse of the employment paradigm, often exacerbated by current forms of nomadic work and combined with high social expectations and job uncertainty, has led to the recasting of labour organisation and the configuration of a new way of working.

FREELANCING IN THE CREATIVE LABOUR MARKET

A central feature of the creative labour market is the rise of freelance workers, referring to knowledge workers who can live and work anywhere, primarily because of advances in telecomputing technologies; they are often defined as 'urban bums' or a 'precarious class' due to the precarious financial situation that many of them find themselves in. The contemporary shift in working and its patterns has produced the growth of open workspaces as a reaction to the diffused state of job insecurity, better known as precarity (Gandini, 2015), and other factors, such as the consequent lack of affordable spaces in the city, which leads to the need for collaborative and shared spaces.

Special attention should be focussed on the term precarity and its meaning in urban design. The concept can be linked to the socio-spatial context under investigation, deeply transformed by historical processes in many post-industrial societies associated with the changing economy, neoliberalism, globalisation and increased mobility. The geographer Ella Harris offers an interesting perspective on this term, talking about how 'precarious geographies are transforming the urban fabric and, in particular, its spatial-temporality, producing a city typified by flux, flexibility and uncertainty' (Harris, 2015). Therefore, precarity could become an opportunity for flexibility, being translated from a precarity of labour to a precarity of place.

In fact, the trend of shared working spaces has been particularly intense during and after the global financial crisis in 2008. The fast speed at which co-working spaces are spreading in London suggests that attention should be given to the underlying dynamics and meaningful processes that govern this practice, and the spaces where those take place in order to better support the context in which users base their everyday lives.

Although there are various studies focusing on co-working spatial configuration, little evidence has been provided up to now about mechanisms producing a significant sense of place and the consequent effects on the urban context, where proximity dynamics can have spill-over effects on the city.

SPATIAL ATTACHMENT

This research argues that alongside the increasing new forms of work, aspects of attachment to place have emerged around co-working spaces, generating the question: do co-working spaces in London help to generate meaningful attachment to place?

The research has been conducted in a single, embedded co-working space Second Home Spitalfields, with the aim of understanding the dynamics and habits that generate within members meaningful attachment to the specific neighbourhood. Second Home is located between Hanbury and Princelet Streets, near Spitalfields Market, in the core of the vibrant art culture that has transformed the area into a creative place. Based on a membership scheme, it offers a combination of workspace facilities, public events and classes on skills development. The events, social networks and the descriptive language and images are carried out by hosts pursuing the slogan 'Make yourself at home!', treating the co-working area as a 'third space' where spontaneous socialisation between home and the office happens, intertwining work and community.

POTENTIAL UNLOCKED

The history of a place determines its narrative character, which affects the perception of people passing through it. For these reasons, the historical context, as well as the built environment, plays a key role in the process of attachment to the place.

After the Second World War, Brick Lane was transformed considerably and, for the first time, documents began to refer to Britannia House, the case study building, which was then used as a carpet warehouse. The area has been developed over many years; an important step was made in 2007, with the publication of the London Borough of Tower Hamlets' City Fringe Opportunity Area Action Plan. The plan recognised the importance of co-working spaces and their role in the London economy, in particular through the re-use of vacant land and derelict buildings in the area for employment uses as 'flexible workspaces'. From 2010, the

1 Second Home in its wider Spitalfields neighbourhood context
2 Second Home: the ground floor cafeteria open to members and the local community
3 Second Home's new development beside the historical residential terraced housing
4 'Choose Love' murals in Hanbury Street for the celebration of the 20th anniversary of Refugee Week, with the engagement of members and local communities.
All images: Irene Manzini Ceinar

site has been part of the Spitalfields area, as defined by Delivering Placemaking (Annex 9 of Tower Hamlets Local Development Framework) which, as part of its core strategy for development to 2025 has the aim 'to support, maximising and competitiveness, vibrancy, and creativity of the Tower Hamlets economy with a particular focus on the small and medium enterprise sector' and flexible workspaces.

Through a succession of important steps to unlock the potential of the area, Britannia House was renovated in 2014 by the Spanish firm Selgascano Architects with input from Tibbalds Planning, on behalf of the private company Second Home. In addition to open workspaces for members only, the proposal included a curved bubble structure on the ground floor as an extension to accommodate an ancillary cafeteria open to the local community. Another ancillary space to Second Home, the bookshop Libreria opened its doors to the public in 2016. Located on the opposite side of Hanbury Street, Libreria offers to members and the local community a 'digital-free-zone' (Silva, 2016) and a hotspot for social interaction events organized by Second Home.

COMMUNITY CONSTRUCTION

The findings that emerged during this research through participatory observation and diary-interview method, demonstrate that Second Home plays a role in the creation of attachment to the place, where the key elements that make a community are 'hosts' and 'events'. In contrast to a traditional office, members and hosts are brought into a diverse environment where domestic feelings are promoted by the co-working policy. The host staff play a crucial role in the sense of attachment to place as they promote, support, and accelerate the dynamics that produced a shared sense of community. Specifically, hosts promote an informal atmosphere, support members to make sense of where they are, and accelerate the wayfinding where the opportunity is coming from.

The engagement of members and the construction of a community is a long process, not always perceived as a whole but as a micro-community which enhances professional and personal identities. In this view, what makes a community is not the quality of relationships among members, but rather a set of shared practices for accomplishing some intended purpose.

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In particular, Second Home offers its members a range of activities and events, from the Friday rooftop terrace yoga sessions, to the How to Make Documentaries workshop, involving the co-participation of the local community, such as the Adidas Bootcamp along Brick Lane and the Choose Love mural project on Hanbury Street.

URBAN CHANCE

From the data gathered, it emerged that attachment processes are mainly developed by members at the macro-scale (neighbourhood) through patterns of routine. In fact, nearly 50 per cent of the participants spend time around the neighbourhood and all the interviewees agreed that Second Home represented a catalyst to get to know the neighbourhood better. To some extent Second Home contributes to creating concrete spatial opportunities for making connections with the neighbourhood and developing specific feelings associated with it.

Two emerging factors in promoting the process at the urban level are the 'routine' paths and the discounts provided by Second Home to promote the local shops and café in Hanbury street. The temporal dimension is a key element to understanding how the members' sense of attachment or relationship with the place develops over time. Generally, Roaming members (freelancers) put more effort into discovering the area, as they look for adaptation and feelings of belonging in a relatively shorter time, while Studio members (working for a company based in the co-working area) are more strongly tied to the surrounding area, as it is part of their routine. Since a consistent number of Roamers were previously based at home and hypothetically may still work from home, their need to recreate a meaningful connection with the place is strong. Furthermore, the discounts that people get as a member provide a strong impetus to move around Hanbury Street and Brick Lane, to discover new places and make a connection with the neighbourhood.

As co-working spaces are living spaces where time matters greatly, only a small minority of members stay for long enough to become rooted in their particular co-working and local context. However, the strategic ways in which members seek to develop a sense of place around the case study show that there is a will for settling, where time reinforces the spatial but also the symbolic role of the neighbourhood.

The study reveals that the complexity of the dynamics occurring in co-working spaces often acts as a generator of informal place-making processes. Therefore, it is important to identify the degree of success or adversity of co-working spaces in empathising attachment to place. ●

Irene Manzini Ceinar, urban designer/architect
The research that underpins this article was conducted from April to September 2018 for a dissertation as part of a Master's degree (MRes) in Interdisciplinary Urban Design at The Bartlett School of Planning.

Green planning in Stuttgart's Media University. Source: Max Bottinger, Unsplash

Climate Change and Urban Design

Never before has climate change been such a pressing issue in the minds of the world's political and business leaders. Whilst there has been broad consensus on the threat of climate change in the scientific community for a few decades, the historic Paris Agreement in 2015 marked a major shift in level of seriousness afforded to this issue by some of the world's most important decision-makers. This shift has been catalysed by the increasing frequency and severity of extreme weather events, which is plain to see and reported around the world, resulting in greater efforts to communicate the risks of climate change and to convene actors to stimulate appropriate action.

Since 2015 the city of Houston, for example, has been hit by three 1-in-500-year flood events, and total losses from storm damage in the US in 2017 are estimated at $265 billion. In the same period there have been prolonged heatwaves in the UK, drought leading to water shortage in Cape Town, a string of hurricanes in the US, typhoons hitting Japan, flash flooding in Jordan and wildfires in California and Australia. The climate change impact felt in any location varies depending on the type of extreme weather events experienced and on broader infrastructure and social vulnerabilities, but according to Munich Re data the frequency of weather-related catastrophes has increased six-fold since the 1950s.

October 2018 saw the launch of a critical, sobering report from the Intergovernmental Panel on Climate Change (IPCC) which highlights the differences between a world warmed by 1.5˚C compared to 2˚C warming. It outlines how changed weather will seriously threaten health, livelihoods, food security, water supply, human security, and economic growth if we do not act quickly and decisively to meet the Paris Agreement's 1.5˚C target. Emissions must peak by 2020, be halved 2030, and halved again by 2040 and 2050. It is an extremely powerful call to action.

At this year's Global Climate Action Summit in San Francisco, cities around the world committed to bold and ambitious climate action plans to reduce global greenhouse gas emissions and adapt to the impacts of climate change. This is on top of the commitments made by thousands of cities in the Global Covenant of Mayors on Energy and Climate, and through other initiatives. It was announced during the summit that greenhouse gas emissions had already peaked and were beginning to fall in 27 major cities. In addition, over 400 companies committed to meet 100 per cent renewable energy targets, and nearly U$1bn was announced in funding to improve land use and forest conservation.

The actions we need to take are generally known, often technically straightforward, and economically attractive. It comes down to promoting measures that reduce emissions of greenhouse gases (mitigation), and to integrating strategies to cope with predicted extreme weather in existing and new development (adaptation). The *Exponential Climate Action Roadmap* launched at the Global Climate Summit sets out 30 actions to halve global greenhouse gas emissions by 2030. Few of the actions outlined will be new to urban designers, architects and planners.

These professionals have critical roles in driving forward new development and regeneration that responds to the threat of climate change. This does not mean sacrificing good urban design; instead, it underscores the importance of current trends and concerns around compactness, transit access, walkability, equity, and working with rather than against natural landscape systems. Urban planners, designers and architects are armed with the tools and strategies to promote walking and cycling, reduce car dependence, integrate clean energy generation and optimise energy use in buildings. They can design to store rainwater, minimise floodwaters and their impacts, limit urban heat, provide shade, mitigate damage from windstorms, and allow safe evacuation from places after disaster events. These climate-related actions also have vast joint benefits for health, well-being, energy security and other issues that citizens care about.

Professionals can use their voices as part of a design team to ensure that adaptation and mitigation routinely sit alongside other core considerations such as demographics, commercial mix, community participation and existing environmental constraints. They can promote the need for and benefits of climate action in the local policy context, and raise the ambition of a client brief. They can engage with initiatives like Planners for Climate Action, Rebuild By Design and countless other global, national and local processes seeking to accelerate and raise the ambition of our response to climate change. Crucially universities need to integrate adaptation and mitigation considerations into curricula for urban planning, urban design, architecture, landscape architecture and related disciplines, learning from the handful of leading institutions already doing so.

We hope you find this collection of articles helpful. They provide perspectives on masterplanning and urban design principles for climate change, and on responding to specific issues around heat and sea level rise. By making the connection across to city networks, other articles consider how urban designers can influence policy and decision-making, and help to facilitate global knowledge sharing. There is now an urgent need for effective climate action, and collaboration and partnership are paramount. ●

Amy Kirbyshire, editorial lead for the C40 Cities Knowledge Hub, and Ben Smith, Director of Energy, Cities and Climate Change, Arup. Both are acting in a personal capacity

Reference

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Masterplanning in a Changing Climate: A UK perspective

Michael Henderson and Kieran Power suggest ways of producing masterplans that will be resilient to climate change

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Following one of the most prolonged heatwave periods in the summer of 2018, it is becoming increasingly clear that the UK is poorly prepared for a significantly warmer future. Despite risks to health, well-being and productivity being afforded equal priority to flooding and coastal change in the *UK Climate Change Risk Assessment*, the focus of climate adaptation efforts in the UK has been heavily weighted towards flood alleviation schemes. In recent evidence to Parliament, MPs heard that there were almost 400 heat-related deaths on the hottest day of 2016, and by 2040 there could be 7,000 heat-related deaths a year. If a flood killed this many people it would make international headlines, yet we do not have building regulations to manage overheating.

If we are to take climate adaptation seriously, we must ensure that our building stock and associated infrastructure is suitable for expected future conditions. In the UK this is likely to include warmer wetter winters and hotter drier summers, with an increased likelihood of deluges of rain and erratic storms. On the coast, we also need to consider a sea level rise.

Although the most serious impacts of climate change may be in the future, the most opportune time to be thinking about adaptation is early in any design process. A range of risks exist for masterplanned developments under current conditions, and climate change acts as a multiplier for many of these risks, thereby increasing the urgency with which we need to act. This is particularly the case for large-scale strategic masterplans which can set the course of urban transformation many years into the future; some large masterplans are built over the course of a decade. Many climate impacts are spatial and as such considering climate risks early in a spatial masterplan provides the greatest opportunity to integrate cost-effective adaptation measures.

This article looks at what to consider when evaluating climate risks and sets out some simple and straightforward design approaches.

1 View of the North West Cambridge development. Source: Aecom

CONSIDER YOUR NEEDS

Before embarking on any attempt to integrate climate risk into masterplanning, planners should always ask: 'what level of detail do I need, to make an informed

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2 A resilience planning workshop in the Hague. Source: Ben Smith, Arup
3 The San Francisco Bay Area skyline. Source: Derwiki, Pixabay

decision?' Highly detailed and quantitative approaches are available with the help of specialised consultants, but in some circumstances a light touch approach can meaningfully support more climate-resilient decision-making. The appropriate approach will vary based on factors such as:

- **Acute and chronic climate hazards:** focus on the physical impacts of projected climate change that are relevant to your site. In recent years the focus of most climate risk assessments has been increasingly on acute, more visible hazards such as severe rainfall events causing flooding. However, it is important not to lose sight of the link between acute hazards like floods and more chronic climate hazards; gradually rising sea levels, for example, increase the potential severity of future storm surge events. A masterplan must consider both acute and chronic, longer-term hazards.
- **Scope of masterplan:** for a concept masterplan, the headline level climate projections and risks provided by the UK Climate Impacts Programme (UKCIP) for different administrative regions (http://ukclimateprojections.metoffice.gov.uk/21708) may be sufficient, whereas more detailed data may be needed at the detailed masterplan stage.
- **Vision and objectives:** the *UK Climate Change Risk Assessment* (UK CCRA) definition of risk is 'the potential for consequences where something of value is at stake and where the outcome is uncertain'. Setting clear objectives for the masterplan before assessing climate risks will link the uncertainty of climate change to the plan's definition of success.
- **Timing and staging:** climate data for the UK can be sourced over a range of time horizons (e.g. 2020s, 2050s, 2080s). Choosing the right time horizons will depend on the period over which the masterplan will be rolled out, and the intended longevity of the project.

IDENTIFY AND ASSESS THE RISKS

In its *Fifth Assessment Report* (AR5), the Intergovernmental Panel on Climate Change (IPCC) defines risk as a function of:

- **Exposure:** the presence of people, livelihoods, species or ecosystems, environmental functions, resources, infrastructure, or assets in places that could be adversely affected by hazards.
- **Vulnerability:** the propensity or predisposition to be adversely affected. Assuming a site is exposed to a hazard, vulnerability considers susceptibility of land uses and assets to harm, as well as their capacity to adapt or respond to the consequences.

ARE YOU EXPOSED?

For each hazard, the logical first step is to consider the site's expected exposure over different time horizons. Looking at this spatially enables climate hazards to be factored into the masterplan and analysed alongside other environmental conditions and the design and layout aspirations.

First consider the current exposure, e.g. which parts of the site are likely to be affected by a 1-in-100-year flood event according to the Environment Agency's Flood Maps for Planning? And how severe will the exposure be? Then think about future exposure considering climate change. For flooding this can be done relatively easily by treating the current data on a 1-in-1,000-year event as a proxy for a 1-in-100-year event later this century, given the effects of climate change. This is a coarse but defensible approximation that can quickly provide a good sense of how flooding could affect the site in future. Spatially considering future flood exposure in more detail will likely require specialised modelling.

For other climate hazards like extreme heat, cold, and high winds, public datasets such as the UK Climate Projections 2009 or the forthcoming 2018 update can provide good indicators, but do not have sufficient spatial resolution to distinguish differences in exposure across a site. Assessing exposure for the site as a whole will typically be sufficient for these variables; much more important is considering the variation in vulnerability of different asset types, land uses and users.

WHAT ARE THE VULNERABILITIES?

Different receptors on a site (e.g. land uses, infrastructure, buildings, user groups and natural assets) will have varying sensitivity and adaptive capacity to climate hazards. Again, despite the potential to make significant cost effective climate adaptations at the masterplanning stage, most toolkits that assess vulnerability, such as the Chartered Institution of Building Services Engineers (CIBSE)'s *Testing the limits of thermal comfort,* are focused at the building scale or for much broader geographies. During the early stages of masterplan development it can be valuable for decision-makers to ask a few simple questions for each combination of hazards (where there is a chance of exposure) and receptors:

- Are we designing for everybody (e.g. older people that will be disproportionality impacted by climate risks)?

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- From which direction and how strong are prevailing winds?
- How is the development orientated in relation to the sun's path?
- Are there areas of flood risk, and where are these?
- Where are the densest areas of the site in relation to waterways, water bodies and critical infrastructure?
- What existing utility infrastructure exists on the site and where is new infrastructure likely to be positioned?
- How will people be evacuated in an emergency?

DESIGNING FOR ADAPTATION

Adapting to climate change reduces the climate risk by changing the components of the equation above:

- through retreat (by changing the severity/frequency of a climate change impact on a sensitive receptor)
- by defence (reducing the sensitivity of a receptor to an impact i.e. engineered flood defences)
- by increasing adaptive capacity (through better education or supplying alternative resources) or
- a combination of all three.

Deciding whether to retreat, defend or change practices to improve coping capacity was central to the San Francisco Metropolitan Transportation Commission's Adapting to Rising Tides partnerships programme to develop a masterplan for transport infrastructure in the Bay Area, in light of predicted sea level rise. By examining the potential impact of sea level rise scenarios on the transport assets and routes, the project showed that there had been considerable investment in areas that are likely to become inundated. A cost-benefit analysis was undertaken to inform the decisions as to whether to move these assets to somewhere safer or to engineer more robust defences. The study took a broad view of the potential costs associated with disruption, including the direct costs of impacts to the assets but also the consequential costs of indirect impacts such as reduced productivity. For transport routes, improving the coping capacity focused on identifying alternative ways to deliver the transportation service, using alternative streets during flooding.

4 Danshuei River Mangrove Nature Reserve – Mangroves are an effective flood management tool. Source: Amherst Wu, Flickr Creative Commons
5 Visions of the Heart of Doha. Source: AECOM

PRINCIPLES OF CLIMATE-SENSITIVE MASTERPLANNING

- **Consider climate change early** – Considering climate change in the masterplan provides the greatest potential for reducing risks in a way that is both cost-effective and acceptable to the design aspirations. As the design develops, the window of opportunity will reduce for making some interventions.
- **Move sensitive receptors** – It may sound obvious, but the most effective way to reduce climate risks is to move the sensitive receptor away from exposure. Spatial analysis of climate hazards when masterplanning will help feed into the land use strategy.
- **Utilise natural systems** – Perhaps the greatest opportunity for considering climate risks early is the potential to use natural systems and processes. These are often free or lower cost than many other interventions. These passive design approaches are most often considered in relation to building orientation to make the most of solar gains and natural ventilation. These approaches can also be applied on a larger masterplan scale.
- **Do it sustainably** – Just because adaptation measures increase the resilience to climate risks, this doesn't automatically mean that they make the development more sustainable. For example, protecting properties from floodwaters by providing concrete defences may make them safer, but they will increase the embodied carbon associated with the development. These trade-offs need to be considered in appraising adaptation options.
- **Develop the business case** – The full cost of protecting a site from climate risks may increase costs to such an extent that they undermine the development's overall viability. As such, it is important to establish a rounded business case that takes account of all of the benefits. The cost of protection may be too much for the development to bear; however, once

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the cascading consequences of climate impacts are taken into consideration, it is likely that other parties will benefit from taking action. As such, understanding all of the benefits and how they impact on other stakeholders can be useful in developing partnerships to fund climate adaptation initiatives.

● **Build adaptability into designs and staging** – While there is now no uncertainty that human-induced climate change is real, we cannot predict exactly how and when its impacts will play out. Modern climate science and risk assessment techniques can help, but masterplanners will still need to embrace a degree of uncertainty. Major new developments can take decades to come fully to fruition, and over this time more information about the effects of climate change will come to hand. Therefore, the layout, staging and infrastructure of a climate-sensitive masterplan must avoid path dependencies, leaving scope to adapt and evolve to meet changing environmental conditions and user needs.

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EXAMPLES OF MASTERPLANS THAT EMBRACE NATURAL SYSTEMS

The Heart of Doha

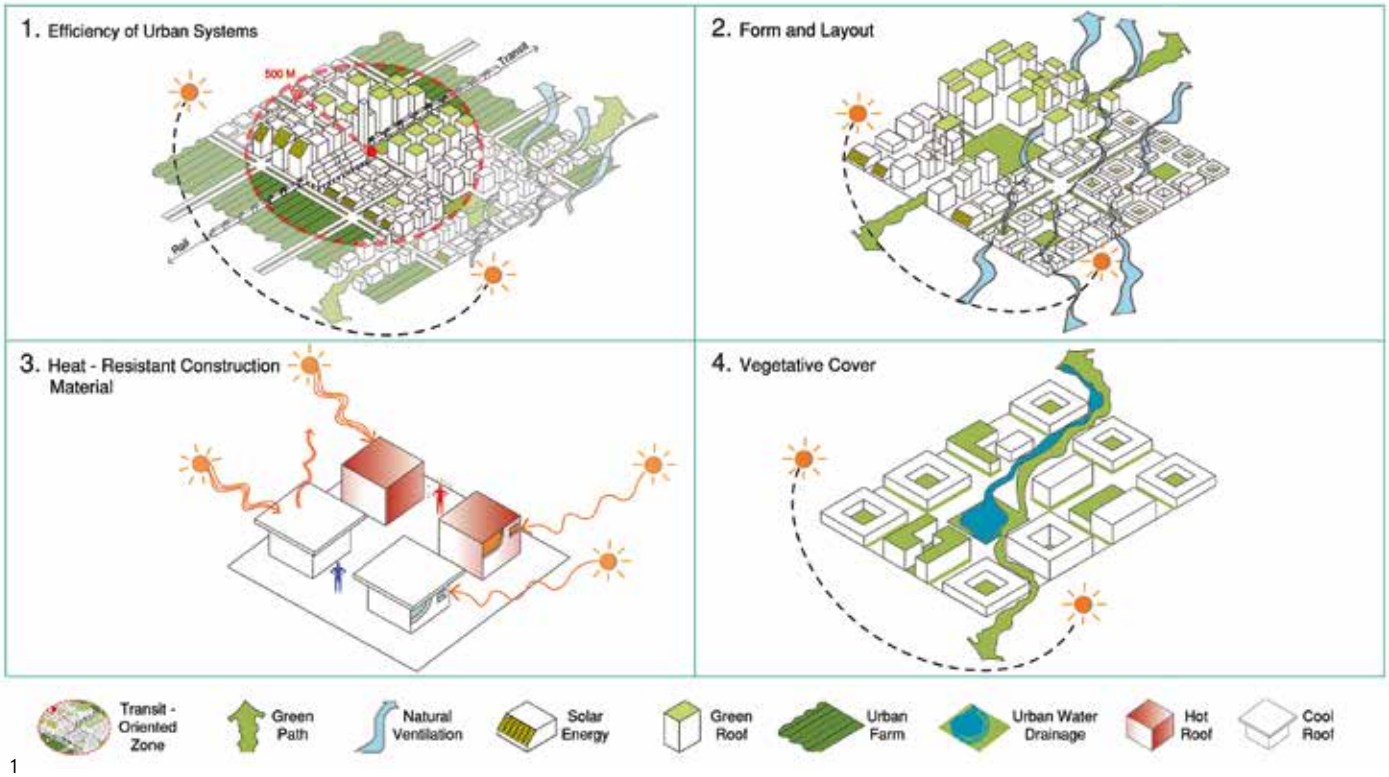
The Heart of Doha project to regenerate the historical core of the city deliberately manipulates natural processes to keep the public realm cool and usable in the hot Qatari weather. The masterplan is based on a network of open spaces and streets with a strong bias along the north-south axis. This establishes a pattern for the development blocks and buildings to optimise the cooling benefits from the prevailing north-north-westerly winds. To complement the orientation, the massing gradually increases from north to south, creating shaded north-facing streets and helping air flow along east-west streets.

North West Cambridge

The new 3,000 residential units and 100,000m^2 research space development by the University of Cambridge at North West Cambridge embraces natural processes to reduce flood risks, while providing alternative sources of water in a very water-scarce region of England. All rain falling on the rooftops and streets is captured and channelled into vegetated swales. As water was considered early in the masterplan, these swales convey the water along natural drainage channels, which in turn have become the primary movement corridors. The swales offer primary treatment to the storm water before it flows into attenuation ponds. These ponds prevent downstream flooding and act as storage for water reuse across the site for all toilet flushing, irrigation and even some washing machines. ●

Michael Henderson, Regional Director and Kieran Power, Associate Director, City Resilience and Sustainable Development, AECOM

6–7 The new University of Cambridge development Sustainable housing. All images source: AECOM



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From Climate Science to Design Practice

Jeffrey Raven offers principles and ideas on phasing and participation to deal with climate change

The timing of this issue on urban design and climate is critical. The science is clear: action is needed urgently. Confronting the challenges of a rapidly urbanising world threatened by climate change demands an expansion of the traditional influence and capabilities of urban planning and urban design, and requires us to collaborate with policymakers, scientists, technical specialists and key stakeholders. The climate-responsive urban design factors outlined here were developed with global cross-sectoral experts to make climate science 'actionable' through a suite of urban form and function strategies which integrate climate mitigation and climate adaptation together, highlighting the need to reduce waste and greenhouse gas emissions through energy efficiency, transit access and walkability; modify the form and layout of buildings and urban districts; use heat-resistant construction materials and reflective surface coatings; and increase vegetative cover.

More efficient urban systems are vital for reducing anthropogenic (human-caused) emissions from polluting vehicles, industry and construction, and waste heat from buildings. Two-thirds of the world's population is expected to live in cities by 2050 and most of the urban spaces that these individuals will inhabit have yet to be designed. The decisions we make today will have extraordinary consequences on our climate for generations, and we must maximise the efficiency of the urban systems that we are building. This means investing in transit-oriented development, urban design that minimises the need for heating and cooling, efficient storage and management of rainwater, and high energy efficiency standards for buildings, for example.

1 Urban Climate Factors
– Efficiency of urban systems
– Form and Layout
– Heat-resistant construction materials
– Vegetative Cover
Source: J. Raven

FORM AND LAYOUT

Compact urban form produces lower per capita emissions, as compact cities tend to offer better access to public transport, have greater energy efficiency, and lower environmental costs for infrastructure. Conversely, suburban sprawl extends the urban footprint across the region, increases intra-urban distances and costs more to service. It also replaces more cooling and permeable habitat, forests and open space that mitigate heat risk and flooding.

However, poorly-designed dense urban environments can produce poor local climates. The urban heat island effect, created by heat-absorbing impervious materials like concrete and asphalt, will worsen as cities get hotter, leaving city residents with little choice but to rely on air conditioning, and increase emissions in the process. These impervious surfaces also cannot absorb storm water, causing greater risk of flooding. Twenty-first century urban design must configure densely occupied urban settlements that offset undesirable local outcomes.

Urban districts should be designed to provide cooling and ventilation that

reduces the need for energy use and allows citizens to cope with higher temperatures, while enabling cities to better manage rainfall extremes. Design that integrates climate considerations, natural systems and compact urban form can result in attractive and healthy microclimates. Forward-thinking design exploits natural systems to future-proof the built environment in response to a changing climate. This includes:

- enhancing natural ventilation by harnessing prevailing summer breezes
- configuring 'win-win' green infrastructure to maximise the cooling effect of summer wind over evapo-transpiring surfaces
- strategic shading by orienting neighbourhoods according to the sun path, and
- shaping varied building forms and surface roughness to enhance summer breezes and reduce winter wind.

Investments in pedestrian and cycling corridors, particularly when integrated with parks and other green-space planning in cities, can reduce carbon emissions, enhance carbon sequestration, and cool cities through extra ventilation and shade. These approaches result in people-centred urban spaces comprising interconnected micro-climates within the city to achieve reduced energy loads, cleaner air and enhanced civic life. Woven through these climate considerations are social cohesion and well-being outcomes that are key to long-term resilience.

THE USE OF HEAT-RESISTANT CONSTRUCTION MATERIALS

Selecting low heat capacity construction materials and reflective coatings can improve building performance by managing heat exchange at the surface. From enhancing surface reflectivity with white roofs to installing high-performance building insulation, this urban climate factor provides inexpensive and quick-win options for reducing urban heat island effects. High thermal mass in buildings enhances the heat sink characteristics of the built environment and can reduce daytime temperature fluctuations. While the contemporary prevalence of lightweight building construction reduces thermal mass, a positive trend is the emergence of lightweight, high-thermal mass insulation technologies such as Phase Change Materials (PCMs}.

Alongside upgrading buildings to enhance energy efficiency, we need to cool neighbourhoods. As cities get hotter, air conditioning use increases. This produces climate change-causing emissions and, at the local level, releases waste heat into the city's microclimate. Through the use of air conditioning, many buildings are isolated from their neighbourhood microclimate. One approach would be to define a wider range of acceptable indoor temperatures, by allowing buildings to be better connected to healthier, outdoor microclimates.

VEGETATIVE COVER

Increasing vegetative cover can simultaneously lower outdoor temperatures, building cooling demand, rain and floodwater runoff, and pollution, while sequestering carbon. Small green spaces, planted courtyards, shaded areas and urban forests create a network of favourable local microclimates and moderate temperatures. The evaporative cooling process from this vegetation allows for the sustainable management of the water cycle and a reduction of the urban heat island effect. Investments in pedestrian and cycling corridors, particularly when integrated with parks and other green space planning in cities, can reduce carbon emissions, enhance carbon sequestration, and, perhaps most effectively, cool cities through evapo-transpiration and shading.

A PHASED APPROACH

These evidence-based urban form and function strategies for climate change mitigation and adaptation could be implemented in phases. The diagrams overleaf illustrate examples of short, medium and long-term phases.

Urban design that integrates climate considerations, natural systems and compact urban form can result in attractive and healthy urban microclimates

SHORT-TERM

Urban policy should favour public-private investment that prioritises climate mitigation strategies and yields concurrent climate adaptive benefits, over those that do not. Current policy and funding often sees climate mitigation (sustainable neighbourhoods) and climate adaptation (resilient neighbourhoods) as mutually exclusive. This needs to change. Districts that integrate climate mitigation and climate adaptation together, alongside urban health and well-being, are better positioned to remain liveable in the years ahead.

Assessment of the micro- and macro-climatic characteristics of a site at the start of a project needs to become standard urban design practice. The urban design community should improve standard (yet flexible) climate-responsive methods for practitioners to embed climate-responsive design in the development process. This would include the improvement of inexpensive streamlined assessment tools that would fit within the capacity of local policymakers and be comprehensible to stakeholders. This capacity-building on the part of the design and planning community could be encouraged by the adoption of urban climate-impact analysis as a legal consideration in the environmental review process. Components would include urban climate mapping and microclimate future scenario modelling of the development impact on residents and energy loads within a warming city.

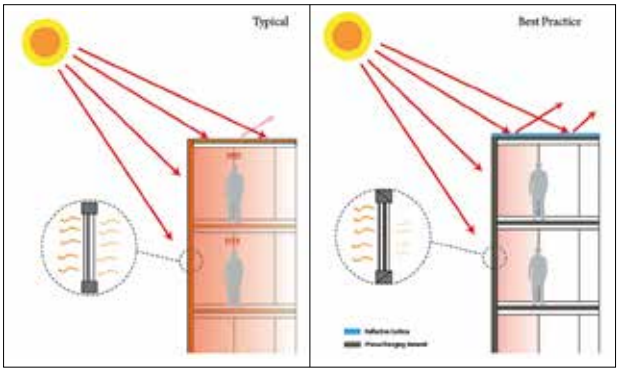
Mentioned earlier is the inexpensive, short-term strategy of enhancing surface reflectivity across urban districts and installing high-performance building insulation to help mitigate the urban heat island effect.

MEDIUM-TERM

Expanding green infrastructure corridors to protected pedestrian/cycling corridors, can reduce carbon emissions, enhance carbon sequestration and drainage. Perhaps most effectively, it can cool cities through evapo-transpiration, ventilation and shading.

LONGER-TERM

Transit-oriented development (TOD) – compact, people-centred, car-free development zones around mass transit hubs – promotes greater efficiency in reducing sprawl impact on surrounding



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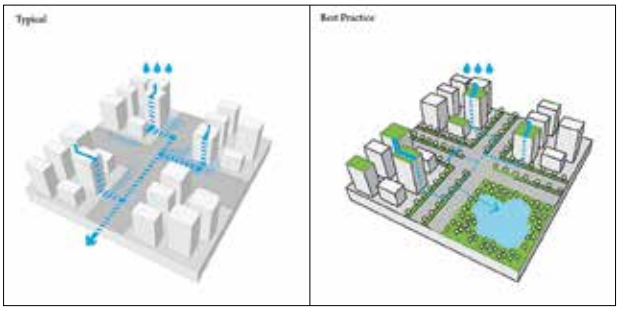

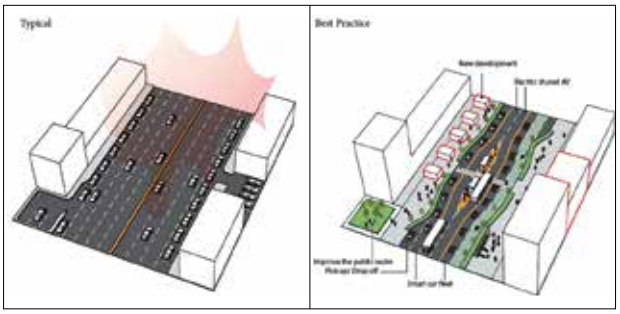

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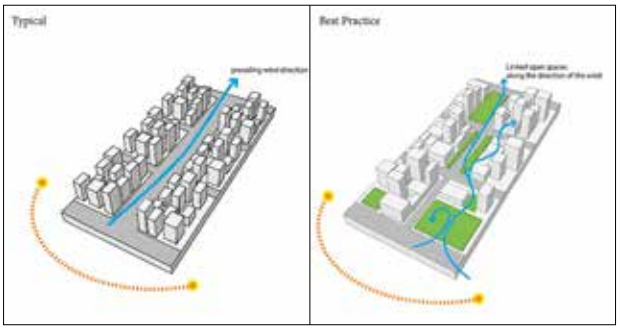

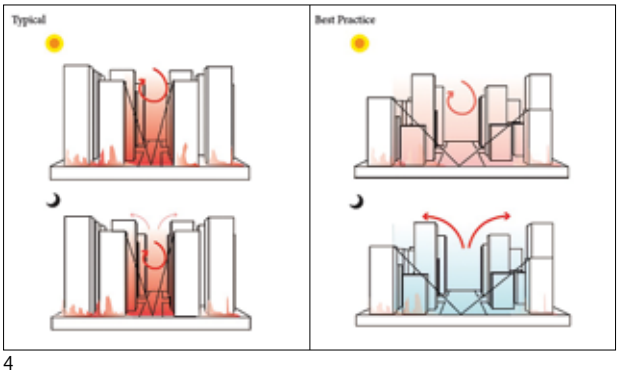

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2 Phasing Short-Term
3 Medium-Term
4 Longer-Term.
Source: Urban Climate Lab, NYIT 2017

landscapes, and should be powered by decentralised building-scale and shared district energy. A TOD's density has the potential for expanded synergies in the reuse and recycling of district energy and waste.

Retrofitting already built urban districts is a challenge. In Hong Kong for example, a series of tall, wall-like buildings block the free flow of air throughout the city. By cutting off a natural source of cool air, these buildings increase local temperatures and the demand for air-conditioning, even in the city's newest, most energy-efficient buildings. In response to situations like these, public-private carrot and stick approaches should be considered. These could include increased Sky-View Factor through the Transfer of Development Rights (TDR) on strategic sites in exchange for bonus development incentives in adjacent sites. In a dense Central Business District, 'banking' privately-owned public space (POPS) plazas should be considered. Rather than a series of random open spaces scattered without considering local climate, these banked POPS could be combined and configured holistically as linear parks to align with prevailing summer breezes and bike routes. For older industrial districts, former brownfield sites could be held and reconfigured to enhance local climate impacts.

URBAN DESIGN CLIMATE WORKSHOPS

To bridge the gap between climate science and action, policymakers, urban designers and stakeholders need tools and methods to identify, configure and evaluate urban climate factors at a local scale.

The confluence of research and operational application through Urban Design Climate Labs and Workshops (UDCW) is providing a blueprint for how to convincingly configure sustainable and climate-resilient urban districts. Led by the Urban Climate Change Research Network (UCCRN) and the Urban Design programme at the New York Institute of Technology (NYIT), these UDCWs are underway worldwide, with graduate students, urban designers, climatologists, and stakeholders working side-by-side. So far, UDCWs have been held in Paris, Naples, and several locations in New York City.

In August 2018, the New York City UDCW drew from a cross-disciplinary team of global urban climate experts from the International Association for Urban Climate, and a NYC-based team comprising UCCRN-NYIT and NYC-based urban design experts, to configure a prototype intervention to map baseline (business-as-usual) and best practice (climate-driven urban design) options. This provides compelling evidence to policymakers (and a wider audience) on the value of the evidence-based strategies outlined above in terms of financial, health and public realm co-benefits.

Subsequent urban design climate workshops are introducing participants to this process, and addressing critical knowledge gaps around 'downscaling' urban climate tools to the local scale and how to reduce uncertainties as we consider strategies and outcomes. Participants explore methodologies for identifying, monitoring, and prioritising cross-sectorial strategies to achieve best possible quality of life outcomes. The experts and designers leading these workshops provide methods and tools for all participants to better engage with each other and with forces rapidly shaping cities on a collaborative platform: policymakers, private sector, urban designers and stakeholders. ●

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This article stems from Jeffrey's work as coordinating lead author of *Climate Change and Cities: Second Assessment Report of the Urban Climate Change Research Network* (2018).

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Designing for the Renewable Energy Revolution

David Driskell discusses the implications of the renewable energy revolution for city form

The general trajectory of best practice in urban planning and design over the past several decades has, somewhat unintentionally, helped to prepare us for the challenges of climate change. Smart growth, transit-oriented development, environmental planning and other responses to traffic congestion, air pollution, ecological degradation and ageing infrastructure have helped to limit sprawl in hazardous areas, improve energy productivity and reduce carbon emissions from what they might otherwise have been. While too many bad practices continue, we have a general outline of what needs to be done: what we need is the political will to do it, high ambitions from urban planners and designers, and a much greater sense of urgency.

At the same time, as cities strive for faster and deeper reductions in climate-changing emissions, new challenges and opportunities are emerging, resulting from both aspirational government policy (like the adoption of 100 per cent renewable energy goals) and increasingly irrepressible market forces. This article explores several challenges and opportunities for city planners and designers related to the shift from fossil fuels to renewable energy, which will fundamentally change the relationship between energy and the built environment. As this shift accelerates, it is imperative that planners and designers understand the new energy paradigm, and engage creatively to do their part in facilitating changes that promise significant benefits for local communities, beyond the necessity of reduced carbon emissions, but including increased prosperity, equity, resilience and improved health.

1 Green roofs equipped with solar power. Source: Julian Wildner (Unsplash)

ENERGY SYSTEM TRANSFORMATION

We are headed toward a world where everyone, everywhere, will have the potential to generate, store, manage and share electricity, drawing on abundant, free and clean fuel provided by the sun and wind. While energy utility companies have started to grapple with what this revolution means for their future, the implications for local planning and design are just beginning to emerge. Electrical power grids and distribution infrastructure are a fundamental community system embedded in land use, property ownership, and a tangle of easements and regulations, not to mention the ubiquitous power lines crisscrossing the urban landscape. How will the shift from a centralised, highly regulated monopoly (or near-monopoly) of utility companies to a much more dispersed, interactive, community-centred energy networks have an impact on the built environment? What does it mean for planning and design practitioners?

From a climate perspective, the shift to renewable energy cannot happen fast enough. Fossil fuel combustion for energy generation and heating continues to increase carbon emissions and drive global warming. But the shift also promises other potential community benefits, including increased energy resilience (especially as battery storage improves), greater customer choice (including the opportunity to become an energy generator), and the ability for cities and even individual districts to invest in local,

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durable energy assets rather than an endless outflow of capital to purchase and burn fuel from elsewhere.

What this shift will mean in terms of city form and function is not yet entirely clear, but even in these early years of energy system transformation, new challenges and opportunities are emerging that will require urban designers' attention:

- Energy generation will become a necessary land use priority in most places, including in residential neighbourhoods. While energy generation in the past was mostly located far from population centres, renewable energy systems will be integrated within the urban landscape, on individual properties and in district-serving pods and solar gardens that combine high efficiency solar with on-site battery storage to service campuses, neighbourhoods and mixed use developments. This will require changes in land use codes, but also consideration of design, visual impact, access and safety issues. Many urban planners already have war stories about impassioned debates pitting unimpeded solar access against the shade-inducing impacts of tree canopies as more properties seek to install solar photovoltaics. Those debates foreshadow the challenges and trade-offs ahead.
- Microgrids and district energy systems will become increasingly common. While district energy has been around for over a hundred years, renewable energy systems and storage are already fuelling an increase in micro-grids and other forms of energy sharing across multiple buildings and properties. This will be needed, and desired, to help shape the energy load profile in order to make renewable energy investments economical (e.g. day-intensive office uses being coupled with evening-intensive residential uses or large consistent energy users such as data farms); to capitalise on the generation differential across multiple properties (e.g. where some buildings have excellent solar access and others do not); and, to support energy resilience goals, where multiple small networks of energy generation and storage are able to withstand disruptive events and come back online more quickly than is often the case when large centralised grids fail. Most microgrids are currently being implemented on institutional campuses controlled by a single customer (i.e. 'behind the meter' and under a single property ownership). Early adopter cities seeking to grow this model to advance energy resilience goals are finding that more widespread application will require changes to how energy systems are regulated, as well as how land use and public rights of way are managed, and how site and building design standards are structured.
- Increasing expectations for energy performance in buildings will change the design process and its outcomes. Cities that have adopted leading-edge energy codes for new development are already seeing a change in design practice. While pre-application meetings were previously attended by the property owner, developer and/or lead architect, it is increasingly common that their sustainability consultant or energy modeller will also be present. As codes push beyond energy efficiency to embrace a fuller view of building energy performance – with expectations for net-zero or net-positive outcomes that require some level of on-site generation – it is changing both site and building design considerations. Because energy performance is determined not only by building construction practices (e.g. insulation, and heating, ventilation and air conditioning systems) but also by local climatic conditions and the relationship of the building to its context (e.g. solar gain, seasonal shading, etc.), traditional approaches that rely on zoning and standard design guidelines to define the building envelope are proving inadequate. Customised and creative site and building designs will be needed if we are to balance expectations for climate-friendly building performance with design-driven standards focused on the public realm. Issues such as building orientation, window glazing, materiality and landscaping will need to be considered not only in terms of design performance but also in terms of their contribution to, or impact on energy performance.
- Energy-generating development will be looking for customers. In the traditional monopoly utility model, customers are passive recipients, consuming electricity that is centrally generated and managed. But in a world where every property is a potential energy exporter, a much more

2 Electrical vehicle charging in Berkeley Square, London. Source: Lars Ploughman, Flickr Creative Commons
3 Refueling a fuel cell electric vehicle at a hydrogen fueling station in California, 2017. Source: NREL, Flickr

complex world of interactions is created, with implications for the built environment. In response, electrical grids will need to become more interactive and able to accommodate highly decentralised energy exchanges, supporting both energy buyers and energy sellers. In the meantime, buildings that currently achieve net-positive energy performance are looking for ways to sell their excess electricity, with many looking to a sector with rapidly growing electrical demand: transportation. The electrification of transportation will further change energy demand and could (or should) inform the desired mix of land uses and building types in urban neighbourhoods. It will also require consideration of how best to integrate electrical charging infrastructure locally, including plug-in and inductive charging stations within a site or in the right of way adjacent to energy-generating properties.

CLEAN ENERGY ENABLERS

While urban planners and designers may find these energy trends a bit inscrutable, they will need to become conversant with them and grapple with the implications for urban form, land use, and development regulations and processes. The centralised utility model is enshrined in the design and construction standards of most cities as well as state or national law, with limited or no opportunity for energy sharing by others across property lines, limited or no ability to cross public rights of way with energy services in absence of a franchise agreement, and no consideration of the energy characteristics of different land uses.

For communities who want to embrace the new energy future, there will be a long list of code changes needed to facilitate distributed renewable energy systems, possibly even as far as considering 'energy load shaping' in land use planning, and including renewable energy generation as a permitted primary use in most parts of the city. It will also require a more flexible and collaborative approach to co-create design solutions with developers who are being asked to achieve multiple community-desired outcomes that can sometimes be at odds. Development teams are understandably frustrated with conflicting layers of local regulation that create obstacles to achieving net-zero and net-positive energy performance.

There are significant vested interests seeking to maintain the status quo, prolong the use of fossil fuels, and even replicate centralised monopoly control over renewable energy systems. If cities are to realise the multiple community benefits which can flow from a more distributed, decentralised and democratic renewable energy system (e.g. increased energy resilience, local investment and equity), they will need to proactively shape a new, localised energy landscape. This will require careful and comprehensive consideration of how policies and practices related to the built environment either enable or inhibit community energy goals. Decades-old regulations, design standards and processes will invariably fall short. Whether through hiring in-house energy expertise or engaging qualified experts, urban designers in local government will need to engage constructively and creatively in finding the right path forward. ●

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For communities that want to embrace the new energy future, there will be a long list of code changes needed to facilitate distributed renewable energy systems

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4 Zero-emission vehicles and electric trams on a tree-lined street. Source: Arushee Agrawal (Unsplash)
5 The Plantage Middlenlaan, the Netherlands: tram tracks on grass, bike lanes and sidewalks in an expanded linear park. Source: Peter Eijkman, Flickr Creative Commons
6 Solar panels on the Highmar senior housing carports in Boulder, Colorado, 2017. Source: NREL, Flickr Creative Commons

Fostering Collaboration

Hélène Chartier describes how city governments and urban designers can work together to create climate-ready urban development

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Responding to climate change requires effective collaboration between urban designers and city governments, who together have a central role and key responsibility in accelerating the transformation of cities. They need to work together to shape a shared vision of local, climate-sensitive urban development, and to convert this vision into adequate rules and tools. They also need to work with private developers and real estate actors to turn this vision into concrete action. This article explores the ways in which this collaboration needs to enable climate responses at a range of scales, through rules and legislative frameworks, and through processes that enable innovation and experimentation.

A COMMON VISION

Urban planners, designers and city officials, alongside a wide range of city stakeholders, should jointly develop a concrete strategy for the city to reduce urban emissions and adapt to current and future climate risks. The strategy should also seek to promote urban health, well-being and quality of life. This process is led by the municipal government, which should seek active collaboration from urban planners, designers, businesses and other stakeholders in its design and delivery.

There is a range of models to support cities in developing climate strategies, such as the Climate Action Plan process that the network C40 Cities is currently rolling out to develop plans in line with the 2015 Paris Agreement. Guidance and resources are available for cities outside the C40 network to develop their own ambitious climate action plan[1]. Local Governments for Sustainability (ICLEI), the World Wildlife Fund (WWF), the Carbon Disclosure Project (CDP), the World Resources Institute (WRI) and others also offer support or access to data or knowledge products.

A city's climate strategy should follow key principles for sustainable and resilient development, most importantly:

- Put climate and environment at the core of the city's policies. These considerations can no longer take a back seat, and must be incorporated as guiding principles across all areas of policy, from transport to housing and economic development.
- Curtail urban sprawl and promote compactness and regeneration in existing urban areas. Densify development close to city centres and public transport hubs, and prioritise the renovation and regeneration of existing districts rather than expansion.
- Ensure that urban development is accompanied by the deployment of public transport, networks for cleaner heating and energy, and green spaces. Ensure residents of new developments are connected to these urban services and enable them to enjoy quicker and greener movement around their city, the joint

1 Central Paris. Source: David Bulir Flickr Creative Commons

benefits of cleaner heating and energy such as less air pollution, and benefits associated with urban parks and green space.

- Encourage mixed used districts and the adaptability of buildings and spaces. This is key to reducing commuting and strengthening the quality of urban metabolism and city life. For example, the City of Paris is developing large-scale initiatives to transform office buildings into housing in districts that are too specialised.
- Promote local production, short supply chains and low-carbon logistics. Cities should allocate areas for local production (especially for food) in the metropolitan area and encourage the development of shorter local supply chains.

FROM VISION TO POLICIES

To further institutionalise the climate strategy, and to compel all stakeholders to follow new ways of building, working and living, standards should be established to guide the design, construction, renovation and maintenance of buildings and public space by developers, architects, landlords and property managers, public utilities and all other partners in city building. This is vital for efficiently implementing the political objectives set by city governments and to deliver them quickly, and at scale. The setting of policies and standards must bear in mind relevant national standards and regulations, linking to voluntary standards such as BREEAM, where relevant.

Paris is a leading city example. In 2017, the city's local zoning and urban planning rules were updated to include an article on energy and environmental performance for the first time. This set ambitious energy performance standards – higher than the European and national standards – for new and redeveloped buildings, based on recognised methodologies and certifications. Developers cannot obtain building permits without meeting these standards. The *Plan ParisPluie* (Paris Rain Plan) released in March 2018 similarly sets clear obligations to fight soil sealing (covering the ground with impermeable artificial surfaces) which worsens the effects of heat and increases biodiversity loss, and defines standards to promote the greening of buildings through vegetation and rainwater recovery.

Coupled with ambitious standards, cities should also implement measures to mitigate the rise of property prices due to increased construction costs. High property prices are already a major problem in many cities, and have significant equity implications.

OPPORTUNITIES FOR INNOVATION AND EXPERIMENTATION

Urban planners and designers should lobby for dedicated opportunities to innovate in support of an ambitious, shared vision of the future of the city. They have a vital role to play in developing innovative solutions to implement this vision, given their central position in the urban development process. They are also in a strong position to orchestrate inter-disciplinary approaches, bringing together private and public actors, developers and innovative start-ups, engineers, communities and creative minds in the urban design process.

Many city and local governments are already launching programmes to accelerate the development of innovative solutions. In the United States, Rebuild by Design was launched to elicit innovative ideas in response to the devastating impact of Hurricane Sandy, while the City of Paris is supporting innovation through initiatives such as the Paris&Co Urban Lab. Numerous other funds and competitions also seek to foster innovation and experimentation at global, national and city level. The WRI Ross Prize for Cities received a huge number of applicants earlier this year and funds are being established to support the preparation and implementation of projects identified by organisations such as CDP, C40 Cities, the European Bank for Reconstruction and Development (EBRD) and 100 Resilient Cities (100RC). There is space for innovation in how these projects are matched with funding, procured and implemented.

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2 Seattle: a construction worker installs a clean heating system inside a home. Source: EE Image Database, Flickr
3 Vancouver:The Seawall Olympic VIllage cycle lane. Source: Flickr Creative Commons
4 London: Child's Hill Allotments. Source: Janie Easterman, Flickr Creative Commons

C40 Cities' own Reinventing Cities design competition provides a blueprint for city-led processes enabling urban designers to bring together creative teams to propose and implement game-changing, innovative urban projects. The 15 cities participating aim to stimulate zero-carbon and resilient urban development, and to celebrate innovative solutions to environmental and urban challenges. The cities have collectively identified 39 plots of land (empty plots in new development areas, sites to densify in city centres, abandoned buildings, former industrial sites, underused car parks and others) and invited architects, urban planners and designers, developers, investors, environmentalists, start-ups and neighbourhood collectives to collaborate and compete for the opportunity to transform these sites into new beacons

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Urban planners and designers should lobby for dedicated opportunities to innovate in support of an ambitious, shared vision of the future of the city. They have a vital role to play in developing innovative solutions to implement this vision

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of sustainability and resiliency. The competition attracted the participation of 1,200 urban planning and architecture firms including OMA, MVRDV, BIG, White Architekture, Carlo Ratti Associates, Rudy Riciotti, Tatiana Bilbao, Perkins+Will, Gensler, COWI and Arup. Applicants have proposed creative energy solutions, new construction materials, solutions to promote a circular economy and zero-waste, urban farming and local food production, among many other ideas. The cities hope to inspire similar ambitious action elsewhere in their city and beyond. Implementation will commence in early 2019.

Developing more sustainable and resilient towns and cities requires a wide variety of measures to be planned for and implemented by local governments in collaboration with key stakeholders in urban development. Taken together, these three approaches – developing a comprehensive strategy, turning it into clear policies and standards, and creating opportunities for innovation and experimentation – provide a blueprint for this collaboration, enabling cities to devise locally appropriate solutions. ●

Hélène Chartier, Senior Advisor, Reinventing Cities programme at C40 Cities. More information about the process can be found at www.c40reinventingcities.org

Reference

1 https://resourcecentre.c40.org/climate-action-planning-framework-home

5 Portland, USA: bikes and tram. Source:Steven Vance, Flickr Creative Commons
6 Paris: Ternes Villiers. Source: BNP Paribas Real Estate, Jacques Ferrier Architectures, Chartier Dalix Architectes, SLA Paysagistes, Splann

Climate Action and the Resilience Dividend

Tom Lindsay and Braulio Eduardo Morera show how cities can combine climate change actions with other beneficial measures

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Increasingly frequent extreme weather conditions are not the only issue shaping cities; from urbanisation to migration, city authorities all over the world are facing unprecedented situations with finite resources, and having to make hard choices. So how should they prioritise them?

While climate change is a pressing concern for many cities, actions related to it are more likely to be prioritised and embedded in a new development masterplan or strategic plan, if they have multiple benefits and address more than one acute shock or chronic stress, such as multiple hazards, or joint benefits for human health.

Recognising this, organisations such as 100 Resilient Cities (100RC), United Nations Office for Disaster Risk Reduction (UNISDR) and United Nations Habitat are considering climate risks in cities within broader frameworks of urban resilience. The urban resilience approach enables cities, at the city planning level, to take into account the disruption to their physical systems alongside cascading impacts on their social, economic and governance systems. The urban resilience framework, which underpins 100RC's work, is based on research from Arup and the Rockefeller Foundation. It enables urban practitioners to embed and communicate the joint benefits of a proposed design, and collaborate with multiple stakeholders, including environmental scientists, social specialists and economists to present evidence in support of these benefits. 100RC refer to this as the Resilience Dividend; the net social, economic, and physical benefits achieved when designing actions in a forward-thinking, risk-aware, inclusive and integrated way.

This article, based on learning from 47 resilience strategies produced by cities with support from 100RC, gives a flavour of the range of city-led responses to climate risk. It first provides an overview of the climate-related shocks and stresses that these cities are tackling. It goes on to describe the initiatives they have identified in their resilience strategies to respond to the challenges emerging from climate change, and the joint benefits they bring.

1 Pittsburgh: the Strip District Waterfront proposal along Allegheny Riverfront Green Boulevard. Source: Riverlife.org

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Citizens don't necessarily talk about climate change and its impact on their lives, but they are likely to recognise its effects in the form of shocks and daily stresses

CLIMATE IMPACT ON FOUR CONTINENTS

Climate change is an issue of global importance with a multitude of impacts. By extension, the actions needed to combat these impacts are also many. Climate Central, an independent organisation reporting on climate change and its impacts on the public, identified this summer as the 'Summer of Extremes' for the US; for some cities it proved to be their hottest on record, and for others their wettest. A similar story played out around the world, and we will continue to see records broken as the climate changes.

With the increasing number of extreme events, we are experiencing the effects of climate change much more tangibly. Citizens don't necessarily talk about climate change and its impact on their lives, but they are likely to recognise its effects in the form of shocks and daily stresses. As a result, actions to tackle these are often where cities can gain most traction and are able to muster greater citizen engagement.

Below are four examples of climate-related events from cities across four continents that have thrown light on wider issues that the cities are facing:

- In 2017, Houston experienced Hurricane Harvey which was one of the costliest natural disasters experienced in the US on record. The severe storm caused damage to buildings and infrastructure, and loss of life primarily from flooding. The aftermath also exposed issues around planning. Certain neighbourhoods, for example, had been built in the local reservoirs' maximum flood pool – areas designed to flood in an extreme storm.
- Severe heatwaves in Melbourne resulted in a spike in heat exposure cases and cardiac arrests. Their 2014 heatwave also spurred the city to consider how the homeless in the city were particularly vulnerable to its effects.
- In 2016 Paris experienced some of its worst flooding in 30 years. Flooding along the Seine also resulted in an evacuation of one town and caused a loss of life and costs to the economy. Climate change is expected to increase the frequency of this flooding.
- Mexico City faces a water scarcity crisis in part due to a combination of harsher climatic conditions and a rapidly growing population placing more demand on available water.

CITIES TAKING ACTION

For cities in the Global South, climate action is incorporated into many of the other major challenges that they are facing. An emphasis on joint benefits is vital, as climate change related risks jostle for priority with other major risks, and resources are typically limited. Development also tends to be happening more rapidly in many of these cities, increasing the number of people exposed to risk:

- **Rio de Janeiro** is developing multi-hazard assessment mapping with the use of computational models, real-time sensoring and Big Data, for better integration of the main risks that affect its urban space. These maps will support analyses about the possible interactions of climate and non-climate-related risks in urban areas. They include, but are not limited to, risks related to intense rains and winds, heat islands and waves, air quality, flooding and landslides, high tides and storm surges, epidemics and urban infrastructure accidents. The aim is to identify the interactions between climate-related challenges and other types of risks in the city, in order to help identify priorities for intervention.
- **Semarang** in Indonesia has set up a campaign to encourage energy and water saving behaviour in the city's population, government and business communities. The initiative is trying not only to reduce greenhouse gas emissions, but also the cost of building construction and maintenance. Furthermore, the initiative aims to deliver social value, promoting a cohesive and engaged community to reach a shared goal of a better environment.
- **The Municipality of Panama City** in collaboration with local NGOs have found scientific evidence which shows that new coastal developments in the city are damaging the mangrove forests – a key resource which can naturally control the impact of storms and tidal surge. A new integral plan for coastal public spaces in the city aims to introduce green infrastructure to regenerate the protective coastal ecosystem. The project includes strengthening the coastal wetlands and watersheds to improve the provision of local ecosystem services, as well as public access to the coast.

For cities in the Global North, the focus is on actions related to infrastructure and in response to climate-related shocks such as heatwaves and flooding from rainfall:

2 Green roofs absorb water and help to keep the city cool. Source: Chuttersnap Unsplash

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● **The City of Seattle** is balancing climate mitigation and adaptation through its initiative to cut carbon emissions by promoting clean energy as well as a green economy. The first part of its strategy is a move away from burning harmful fossil fuels; the second part is even more forward-looking by aiming at benefits beyond climate action to create more employment opportunities for citizens.

● **In Rotterdam**, schemes to re-use roof spaces are not just an innovative way to add more green surfaces in order to reduce CO2 emissions; different bandings of roof are providing multiple benefits. Green roofs provide greening and biodiversity; blue roofs retain rainwater and provide delayed drainage; yellow ones generate sustainable energy; and, red roofs provide space for social functions to enhance social cohesion.

● **Vejle in Denmark** is a city at serious risk of flooding now and in the future, as sea levels in the fjord are expected to rise by 25cm by 2050. By using an urban renewal project known as Fjordbyen as a laboratory, Vejle is testing innovations in climate change adaptation and flood control. Flood defences are being designed not only to protect against flooding but to encourage investment by increasing development and real estate value. Storm management and flood adaptation is also being integrated into, as opposed to being separate from, public spaces to maximise the opportunity to enhance liveability in the area.

● **In Paris**, Project Oasis is one example of interventions that are more minimal adaptations and make pertinent use of existing resources. The initiative retrofits paved schoolyards by replacing asphalt with porous material and enhancing vegetation to reduce the effects of extreme heat in densely packed neighbourhoods. These not only address environmental challenges, but also offer areas of respite to improve social cohesion and create a better environment for local communities. By 2050, Paris aims to have 800 of these cool spots.

ACTION FOR WHOM?

Evidence has demonstrated that some groups in the population are disproportionately affected by climate risks and that climate actions must account for this. Many studies have also demonstrated that participatory approaches, particularly those that include the poor and vulnerable groups, whether developing strategies or designing masterplans are delivering positive results around the world. In our work in the 100RC network, we have observed that many cities, inspired by success stories from multiple geographies, are now taking a more participatory approach to climate action. For example, Greater Christchurch in New Zealand is exploring a participatory approach to building resilience in eastern parts of the city. By including local communities in the process, the city council hopes to ensure that any new actions to tackle climate change – in this case rising sea levels – also include objectives to increase local prosperity and connects new and existing communities. Porto Alegre in Brazil has attracted positive attention for its work on participatory budgeting. In Boston, the city's work on extreme heat is taking into account social vulnerability and prioritising populations with the greatest need, including low-income communities, older adults, people with illnesses, and children. The city is also developing targeted neighbourhood adaptation, preparation and response plans.

For many cities, the resilience approach offers a useful entry point to develop an holistic understanding of city challenges, situating climate change as one consideration among others. Participatory approaches such as appropriate consultation, community mapping and multi-stakeholder planning informed by robust evidence are needed to ensure its success. The Resilience Dividend can only be achieved if people see a better, safer and more prosperous future. ●

Tom Lindsay, Strategy Delivery Unit Manager and Braulio E Morera, Director of Strategy Delivery, 100RC

3 Seattle: a city in the middle of a green transition. Source: Jeremy Duguid Flickr Creative Commons
4 Paris: flooding on the Seine in 2016. Source: Adrien Marc, Flickr Creative Commons
5 San Francisco greening. Source: Ben Smith

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Responding to Rising Seas

Amy Kirbyshire outlines the reality, options, and role of planners and designers

For more than 2,000 years, as coastal towns and cities were established and grew, sea levels have barely changed. However, we can no longer rely on static coastlines. As climate changes push sea levels up and shorelines inland, our usual ways of managing coastal flooding and erosion will increasingly be overwhelmed. Sea level rises have potentially devastating consequences for coastal towns and cities, and we need to think about our approaches to adapting to coastal climate risks today.

HOW MUCH SEA LEVEL RISE SHOULD WE EXPECT?

We are going to see sea levels rise by around 60cm because of the greenhouse gases already emitted into the atmosphere. So far we have only seen around 20cm of this since industrial times, because complex climate-ocean interactions create a delayed response, but the rate is accelerating. If we fail to meet the 2015 Paris Agreement's goal of limiting global warming to 1.5°C, sea levels could rise by 2 metres this century, while the total urban population affected by 2050 could number over 800 million people in 570 cities. Local factors like soft or permeable underlying ground rock and land subsidence mean that some cities like Jakarta and those on the US's East coast are witnessing an effective local sea level increase two to three times faster than the global average. Higher sea levels also make coastal storms especially dangerous, as flood waters can add over 6 metres to local water levels.

To help visualise what these numbers actually mean at ground level, the Surging Seas tool from Climate Central allows you to explore what different amounts of sea level rise mean for every coastal place in the world: compare levels for historic (locked-in) pollution, 1.5°C (the Paris Agreement's aspirational goal) and 4°C (what we are currently heading for); look up Bangkok, New York or your nearest coastal city.

1 New Jersey: raised homes along the shoreline. Source: Ira Wagner

Sea level rises are not just a distant threat. In the Netherlands, Rotterdam has long dealt with the challenges of living at or below sea level, and preparing for rising seas is high on the country's agenda. Rotterdam has made strides in showing the world how to defend against, and live with water, although even here there are fears that the city is just biding time. On the streets of Miami, Atlantic City and Norfolk in the US, flooding at high tide – a phenomenon known as 'sunny day flooding' – is already the new normal. This flooding comes up through the ground and drain systems, affecting areas inland as well as the shoreline. Miami Beach, which faces an existential threat, has spent around U$200m raising the height of streets and building a network of pumps to force water off the streets after sunny day floods, but Miami's less wealthy neighbourhoods have so far been left to fend for themselves.

WHAT ARE THE OPTIONS?

The main interrelated options for cities to respond to rising seas are to:

- restrict construction in at-risk areas
- accommodate rising waters by retrofitting existing sites and property
- protect people, property and

infrastructure through improved flood defences, and
- prepare for planned relocations – a process known as managed coastal retreat.

Typically, decisions about the balance of these approaches will take place in a strategic planning process, rather than at the site level, with multiple local authorities and other stakeholders working together. Urban planners, urban designers, landscape architects and related professions have a vital role to play in planning and implementing all these measures.

Using hard flood defences (grey infrastructure) and retrofitting or upgrading property to manage coastal flooding is an expensive approach requiring long-term, repeated investment, and can encourage more construction in at-risk areas. Erecting sea walls and other expensive engineering fixes can make sense for city centres and critical infrastructure, but it is not economical everywhere. In the UK for instance, building defences to keep the current coastline in place is not an affordable option for a third of the country's coastline. Instead, experts advocate blending natural ecosystems and human-made infrastructure along the shoreline to better enable us to live with water. This approach, sometimes referred to as the creation of 'hybrid edges', means allowing certain areas to flood and using parklands, wetlands and dunes as natural sponges and barriers. This both restricts construction in at-risk areas and creates new space for recreation, while improving flood defences. Boston is one city taking this approach.

Construction codes, flood insurance requirements and major flooding events can prompt residents and developers to upgrade existing sites and property. This usually means raising roads and property; for example, some residents in New Jersey are raising their homes on stilts in an effort to cope with increasingly regular storm waters. Singapore is another of the cities raising land and property in anticipation of rising seas. However, this can have negative implications for urban design and the community. In the Miami Beach example, businesses and residents are unhappy that the raising of roads has put their properties below street level.

Restricting construction in at-risk areas, retrofitting existing property and improving flood defences are the current priorities. However, given the number of people likely to be displaced by sea level rises and coastal flooding in the coming decades and beyond, we increasingly need to blend managed coastal retreat into the mix of approaches to make the encroachment of rising seas as painless for coastal populations as possible.

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2 New York: the sea rise levels the city can expect from historic 'locked in' emissions vs. unchecked pollution. Source: Climate Central
3 Miami: sunny day flooding. Source: Shanna Vincent, Flickr Creative Commons
4 Boston responds to climate change with elevated parks and natural flood barriers. Source: Dezeen

WHEN IS MANAGED RETREAT AN APPROPRIATE OPTION?

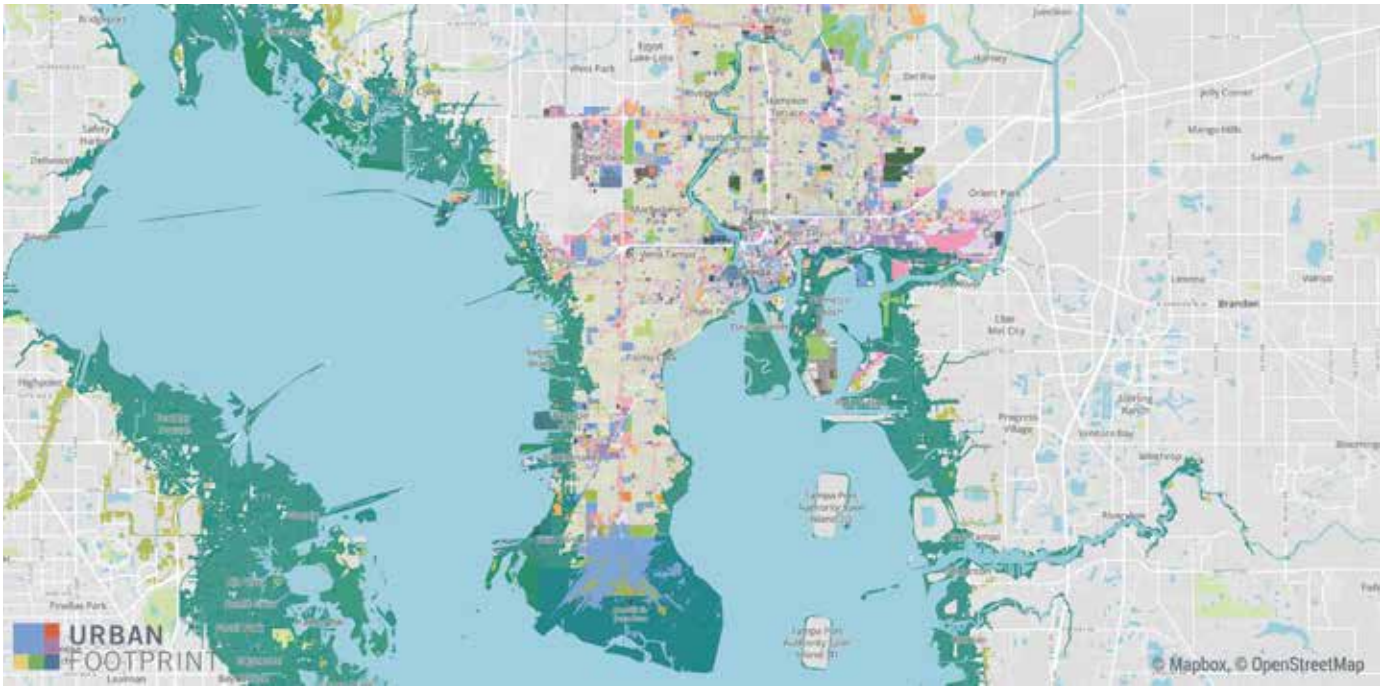
Managed coastal retreat involves the strategic relocation of assets and people away from areas at risk, and enables the land to be restored to its natural state, or used for recreational and lower asset value uses like cycle paths, parks and sports pitches. Once the intervention is complete, the additional financial investment required is minimal relative to the long-term maintenance costs of grey infrastructure. It is not an entirely new phenomenon, but so far managed retreat is rarely seriously considered as an option by residents, planners or decision-makers.

Relocation of any form is controversial and challenging. It has social, psychological, cultural, political, economic and livelihood implications, and some residents and businesses located in areas at risk of coastal flooding and rising seas prefer not to move further from the ocean. Many coastal zones are high value areas and sites of significant development – investment that will often increase if defences are put in place, making it harder to walk away. For these reasons and more, managed retreat is not always feasible or preferable.

The viability of managed retreat as an option for managing the risk from sea level rises and coastal flooding depends on who initiates the retreat, and who benefits from it. Managed retreat is most likely to occur successfully if residents are on board and feel the risk is intolerable, the societal cost-benefit ratio justifies relocation, and there is strong political will to enable and support retreat.

When there is mutual agreement, retreat can proceed relatively smoothly. For instance, in the US, the Federal Emergency Management Agency purchased over 30,000 houses that have been repeatedly damaged by floods and tropical storms after residents chose to move. The properties were then restored to open space, benefiting the broader society because less public money was spent on disaster risk reduction and recovery.

Where a government thinks that retreat makes sense but local people at risk are unwilling to move, or vice versa, the disagreement can sometimes be resolved through negotiation. The government of the Netherlands, for instance, negotiated with 75 households in one town to buy or elevate their homes,



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restoring the town to its natural state as a floodplain to protect several other communities downstream. However, if regulations for retreat are imposed without the residents' agreement and without sufficient compensation or alternatives, it will lead to real hardship for displaced residents, while a lack of support for residents-led relocation can cripple retreat efforts.

HOW CAN URBAN PLANNERS AND DESIGNERS RESPOND?

When developing coastal areas, planners and designers must integrate sea level rise considerations into stakeholder engagement and decision-making processes. Managed retreat should be considered alongside the restriction of construction, upgrades to property and fflood defences in a city's toolkit for managing coastal flood risk. These options are not mutually exclusive, they can be used as a suite of tools to gradually move people and assets away from encroaching seas, where full protection is not viable. Planners' long-term thinking and stakeholder engagement processes mean that planners can be instrumental in leading and initiating discussions around retreat, and if and how it could be used to meet communities' shared goals.

The Vision 2100 process in Norfolk, Virginia is a good example. This is facilitating the proactive consideration of and planning for the long-term risks from sea level rises, where new infrastructure investments will be most effective, and how parts of the city could evolve through other strategies. In Jakarta, another city facing an existential threat, planning incentives are in place to gradually upgrade and expand the land left as green space, and move people out of at-risk areas. Almost 90 per cent of the Jakarta metropolitan region already lies below sea level and over 60 per cent of the city's 10.6 million residents – especially people living in poor, informal, high density settlements known as *kampungs*, are already vulnerable to the regular flooding that the city experiences. There are long-term plans to relocate residents, but in the meantime neighbourhoods are encouraged to transform 30 per cent of the city's land area into green space.

Risk mapping tools can help cities and planners to understand what combination of coastal flood risk responses, including managed coastal retreat, is best suited to different areas along a coastline. For cities in the US, the urban planning tool UrbanFootprint has a risk and resilience module to support urban planners and designers to understand and respond to sea level rises, in addition to flood and fire risk. It allows planners to both map the areas that would be affected by different degrees of sea level rises, and also the impact this would have in terms of lost property, jobs and other factors. While less tailored to planners and designers, Climate Central's Surging Seas: Mapping Choices has similar functionality for coastal places across the globe.

With sea levels already rising, the rate of increase accelerating, and a known locked-in sea level rise coming which is at least 60cm high, we must start planning proactively today. ●

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5 Urban Footprint map of Tampa with 180cm of sea level rise. Source: Urban Footprint
6 The Seawall park at Vancouver's Olympic Village, a popular recreation spot. Source: Flickr Creative

Amy Kirbyshire, editorial lead for the C40 Cities Knowledge Hub, and writing in a personal capacity.
With thanks to Miyuki Hino, Stanford University for her helpful review.

Cooling Off: Designing Cities to Deal with Heat

Jasmin Fox-Skelly, puts a spotlight on the innovations that can keep us and the planet cool

1

2018 was the joint hottest summer on record for the UK as a whole, and the hottest ever for England, according to the Met Office. The heatwave saw soaring temperatures throughout June and July. Although many of us enjoyed the weather, extreme heat can be life-threatening to vulnerable groups such as the elderly. During the height of the heatwave from 25 June to 9 July, there were 663 more deaths than the average recorded for those weeks over the previous five years. This is not the first time that heat has killed in the UK; in August 2003, a month which saw temperatures of 38.5°C hit Kent, 2,091 deaths were linked to the heat.

People living in cities face higher risks due to the urban heat island effect. Building materials such as concrete and asphalt absorb more heat during the day than areas covered with vegetation and then release this heat slowly at night, circulating hot air in urban environments. Today's cities have been designed without taking into account their impact on heat, and this needs to change.

HEAT – A WORLDWIDE PROBLEM

Globally, 2018 was also one of the hottest since records began, with unprecedented peak temperatures across the planet – from 43°C in Baku, Azerbaijan, to 38°C in Kyoto, Japan – and the problem will only get worse. As the earth continues to warm, heatwaves will become more common and extreme. The people most at risk are the elderly, young children, people with underlying health problems, and the marginalised and urban poor who often have little or no access to cooling. In the US, immigrant workers are three times more likely to die from heat than American citizens, while black people are 52 per cent more likely to live in areas lacking cooling tree cover than white people. In India as in Egypt, people living in city slums are most vulnerable. The rapid construction of skyscrapers and shrinking green spaces in Cairo have made one of the fastest-growing cities in the world increasingly hot, and dangerous for residents who cannot afford air conditioning.

Business as usual greenhouse gas emissions would result in all 571 cities in Europe experiencing more and higher intensity heatwaves, with cities in central Europe seeing the biggest spikes in temperatures, including Athens, Rome, Prague and Vienna. Globally, it would mean 215 million highly vulnerable urban

1 London's Southbank: keeping cool during the summer heatwave. Source: Joel Goldstein, Flickr Creative Commons

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poor exposed to dangerous temperatures, an eightfold increase on today. We are all aware that reducing fossil fuel consumption is a priority; but we also need to design better cities that can respond to increasing temperatures.

BUILDING DESIGN

Many buildings in cool countries like Britain are simply not designed to cope with heat. Glass buildings, for instance, become unbearably hot without air conditioning. However, most houses can be modified to cope with heatwaves, while new buildings can be designed with future warming in mind.

For existing homes, buildings can be kept cool by air conditioning, but these units pump heat out into the street. In Paris, air conditioning warms the city by as much as an extra 2°C. Preventing buildings from getting too hot in the first place is a better solution. Buildings can be cooled by painting their roofs white to reflect heat, or covering them with plants, which cool the surrounding environment by absorbing water. Painting the roofs of slums white in the Indian city of Ahmedabad has helped to drastically reduce heat-related deaths and enabled residents to stay in their homes even during the hottest parts of the day. Buildings can be insulated, and ventilation can be improved by using breathable materials. External shutters can block out the sun, and building surfaces can be coated with smart materials that reflect heat. New technology could also result in heat-sensor windows that can automatically open or close depending on a homeowner's ideal temperature preferences. These 'smart windows' are on the horizon.

Buildings can be cooled by painting their roofs white to reflect heat, or covering them with plants, which cool the surrounding environment by absorbing water

2 Shanghai: people trying to cool off in a park during a heatwave. Source: Flickr Creative Commons
3 Well insulated, sustainable housing in Upton with building-scale renewables installed on the roof. Source: Arup

New heat-friendly homes should be designed to maximise the amount of sunshine entering in the winter, and minimised in the summer. Glass buildings should be avoided; they are terribly energy inefficient as they leak heat in the winter and absorb it in the summer. Instead good insulation is needed and thick walls made of a dense material to keep the heat out. This means building relatively low-rise, cube-shaped buildings, and not skyscrapers.

Examples of successful initiatives include Passivhauses, ultra-low energy buildings designed to be comfortable all year round, which require little energy to heat or cool them. They are built to a rigorous voluntary standard, with super-insulation, heat-recovery ventilation systems and tightly controlled rates of air infiltration to make sure that their carbon footprint is as small as possible. A Passivhaus needs just 15 kWh of energy to heat up one square metre of floor surface per year, whilst a Victorian house of the same size would require 300 kWh.

These measures can lead to fewer winter deaths and heat-related illnesses.

4

A recent review by researchers at the University of the West of England (UWE) to assess the impact of the built and natural environment on health found that energy efficient houses have a positive impact on people's physical and mental health, particularly low income groups. Meanwhile, poor housing insulation is associated with increased mortality.

CITY FORM AND LAYOUT

Cooling cities requires us to rethink how buildings, pavements and streets interact and intersect with one another. Road layout is a key factor in urban heat; the urban heat island is much stronger in cities with an orderly grid system, such as New York and Chicago than in those with a more disorderly or chaotic layout of roads, such as London and Boston. This is because buildings in cities with grid systems reabsorb the heat that is lost from the houses and apartments directly opposite them.

High-rise buildings reduce air-flow and raise outdoor air temperatures. In London, large numbers of tall skyscrapers have been constructed with exceptional energy credentials at the building scale, but with little consideration of the impact they have on the overall urban landscape, and other low-rise buildings. Climate-sensitive standards are needed for urban planning and design in line with those for individual buildings.

This includes layout and urban form, and also attributing a greater role to green infrastructure – trees, plants and shrubs – in urban design. As noted elsewhere in this issue, planting trees in urban areas has a cooling effect due to transpiration and shade, with studies showing that parks are about 1°C cooler than surrounding streets. Areas with fewer trees and more concrete receive up to five times as many emergency call-outs during heatwaves than other places, and living in less vegetated areas results in a 5 per cent higher risk of death from heat-related causes.

Water is another vital nature-based solution to heat in cities. Cities are unnaturally dry because storm water drainage systems rapidly carry rainwater away. However some cities have devised ways of retaining, treating, reusing, and diverting storm water, for example by creating wetlands and artificial lakes, which create a downwind cooling effect. Areas close to water bodies can be up to 5°C cooler than the surrounding areas. Simply replacing dark pavements and roofs with lighter coloured materials, or painting them white, also significantly cools cities.

4 Green roofs capture rainwater, clean the air, regulate the building's temperature and provide recreation space. Source: Chuttersnap Unsplash

RETHINKING TRANSPORT

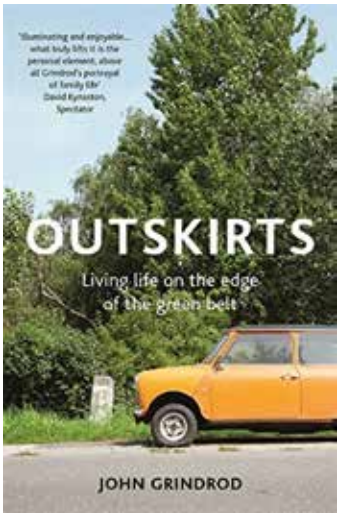
In the long term, if we want to keep cities cool, we have to rethink how we navigate them. Diesel and petrol cars are inefficient and emit vast amounts of heat, directly contributing to urban heat islands. Car pollutants, such as water vapour and carbon dioxide, also stop heat being lost into the atmosphere, as they absorb the radiation and then reflect it back, keeping it at surface level. Of course, these emissions are also a major contributor to climate change. A shift to electric vehicles or to mass transit, walking and cycling can cool cities. In Beijing, for instance, the mass adoption of electric vehicles would lower the city's average temperature by 1°C.

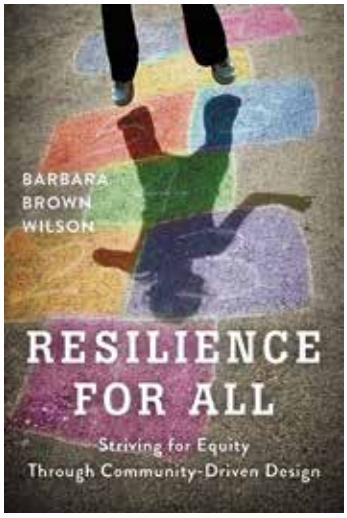
Car-free zones and high vehicle efficiency standards are a politically challenging but effective solution to reducing heat from cars. Designing neighbourhoods where services and goods are available locally, lessening the need to drive and reducing the dependence on imported goods, also has a role to play. Ultimately it is about helping people to make healthy sustainable choices, for example by providing more integrated footpaths and cycle paths that connect commuters, students and children with their places of work, and making driving less attractive for those who don't need cars for mobility. Hamburg, Germany's second largest city, has made strides in this area by banning cars on a number of roads, and developing a green network for pedestrians and bikes. In Freiburg, another German city, walking and cycling are more common than driving because there are plenty of bike paths and bike parking spaces, attractive public transport incentives, and because the city has been designed so that most amenities are a short distance away.

A JOINED-UP APPROACH

It is clear that heat will become a pervasive problem in cities unless they are designed with health and climate change in mind. We need to approach this problem holistically, designing buildings that better regulate temperature, rethinking the layout and transport infrastructure of cities, and putting in place effective action plans to respond when temperatures do rise. We know the solutions; the challenge now lies in working together, across disciplines, to create systemic change. ●

Jasmin Fox-Skelly, freelance science writer commissioned by Our City Our Health, a Wellcome Trust funded public engagement project





Outskirts – Living life on the edge of the green belt

By John Grindrod, 2017, Spectre, £9.99, ISBN 978-1-473-62504-4

Never the one for serious educational tomes, I wasn't convinced that a book about the Green Belt could really be an entertaining read. Nevertheless, John Grindrod's study has received a plethora of excellent reviews and was shortlisted for the 2018 Wainwright Prize for UK travel and nature writing. I personally devoured it hungrily, such was its depth, candour, and frequently laugh out-loud humour.

The author has form: his first book, *Concretopia: A Journey around the Rebuilding of Postwar Britain* (2013) was a study of modernist architecture written for non-architects. Similarly, *Outskirts* is well researched, but the text is interwoven with Grindrod's own back-story of growing up in New Addington, near Croydon (facing the Surrey Green Belt) and how the urban-rural fringe affected his family life, including giving a green outlet to his disabled mother, and inhibiting his claustrophobic brother. There are many social references to the 1960s and 70s, which perhaps defines the age and sets the context for how long we have been trying to circumnavigate the Green Belt.

The book is subtly divided into two. The first half, The sowing, draws evidence going back to the Elizabethan age, and features Octavia Hill's social reforms, Patrick Abercrombie's Campaign to Protect Rural England edicts and the manifestation of the present day Green Belt policy. The second half, The reaping, questions the actions of successive big-name Government ministers, the rise of NIMBYs, Robert Fidler's hidden castle, and the influence of the Green Belt on the current housing crisis.

Outskirts picks up the pertinent points in the history of urban containment and the creation of the series of Green Belts across the country. Intertwined with Grindrod's own reflections are compelling interviews with current stakeholders; these include Ian Tant (president-elect of the RTPI), who was able to furnish the research with his experiences, initially as a young Hertsmere planner secretly identifying potential Green Belt sites for housing, and later as a Barton Willmore consultant, advising volume house-builders of the huge risks when negotiating options for Green Belt land.

The most relatable point raised was that the Green Belt was never a policy to protect the quality of the landscape. Grindrod asserts that one of the things he likes about the Green Belt is that it protects the ugly 'and sticks two fingers up to the narrative that all landscape should be pretty'. One of his most humorous segments finishes 'there is no point telling the green belt to "cheer up love, it might never happen", because it already has. Towns have been built, pylons erected, residents have trampled it and dumped mattresses and burned out cars. If you want a pretty bit of skirt, go and wolf whistle at an AONB or practise your Sid James act in front of a SSSI'. A very enjoyable read!●

Stephen Bate, Senior Planning Officer, Derby City Council

Resilience for All, Striving for Equity through Community-Driven Design

Barbara Brown Wilson, 2018, Island Press, £26.00, ISBN 978-1-610-91892-3

This is a collection of case studies with a difference. It constitutes a coherent whole making the case for community-driven design to achieve greater social justice through the physical improvement of deprived areas. All American, the four in-depth presentations accompanied by four short 'vignette' examples are chosen to complement each other. They focus on 'resilience or resistance' elaborated in the introductory chapter. The cases are Bayou restorations as environmental justice in East Biloxi on the Mississippi Gulf coast after Hurricane Katrina; tactical urbanism to rehabilitate a people's waterfront in New York's multicultural Lower East Side; the transformation of a dangerous place into a public park driven by a local school in Detroit; and installing green infrastructure as an anti-poverty strategy in a poor Portland neighbourhood. Not usually done, the study areas are situated in their wider geographic context, their long-range historic trajectory and their overall planning strategies. This place-based background is set against against more general processes at work elsewhere: natural catastrophes as triggers of change, pressures from real estate developers with or without state support as well as from individual gentrifiers and, conversely, the impact of abandoned properties in shrinking cities and neighbourhoods, the lack of public funds and competences to redress such situations.

The common aim of these interventions is to improve the public realm for and by the local population, hoping to attenuate adverse gentrification effects on local residents, especially from ethnic minorities with low incomes. What interests the author are the very diverse participation networks. They are captured in four diagrams, one of the most telling parts of the book. They identify the active participant agencies and the characteristics of the four cases by distinguishing between community-based organisations and groups, designer and artist contributors, local and federal government agencies and, importantly, community design facilities. Omitted are the developers and land owners, albeit in recognition of their ultimate decision-making powers.

Many of these stakeholders are benefiting from grants and the indirect influence of these temporary sponsorships is discussed in the analysis of the participation process. An important point of contention is that the consultants, and that includes urban designers, often from the outside are paid while the local community is expected to, and does give its local knowledge, time and hands-on work for free. This can make them resentful and suspicious of the ultimate goal of what are often temporary bridging interventions awaiting wholesale regeneration.

Information is provided on the sources, recipients and sums involved, usually omitted in descriptions of urban design case studies claiming to be participatory. Efforts are made here to bring at least some benefits to residents living in precarious conditions. Animated by artists or urban designers, they are being involved in a learning process aimed to increase confidence in their local expertise and to provide them with access to skill and leadership training, hopefully leading to more permanent jobs in such alternative urban development processes.

The book concludes with seven lessons as a step towards greater design justice. They are: to recognise the intractable relation between social and ecological systems; the need to pay local participants as experts of local knowledge; to defer to their local wisdom on community issues; be overt about who handles questions and data; the importance of building coalitions; to acknowledge the worth of micro-projects (which is most relevant for urban designers); and, to explore their potential role in changing macro-systems. ●

Judith Ryser, researcher, journalist, writer and urban affairs consultant to Fundacion Metropoli, Madrid

Making Massive Small Change, A Compendium of Ideas, Tools + Tactics to build viable Urban Neighbourhoods

Kelvin Campbell, 2018, Chelsea Green Publishing, Vermont, £25.00, ISBN 978-1-603-58775-6

This dynamically illustrated book is a call for action: to make many small-scale changes and bring about massive positive ones in how we plan, build and look after cities, towns and neighbourhoods. Starting from the premise that our current planning, design and building systems are doomed to fail – due to their reliance on top-down controls, large-scale inputs and an inability to deliver the kind of places that people need – Campbell sets out a manifesto which encourages and celebrates radical incrementalism.

From active citizens, urban professionals testing out new ideas, community groups coming together or local politicians 'stepping outside the mainstream', the actors in this new approach are everyone, and the actions whatever it takes to make a difference. The book reads as a motivational self-help guide to those seeking to build viable urban neighbourhoods. Set out in three main sections, The System reviews how we got ourselves into a state where a call for action is needed (e.g. the subsection on Why Big Plans Fail, which encapsulates so many political and development industry fallacies.). The Way shows how a new attitude can be cultivated to value simpler protocols, 'starter' conditions and enabling behaviours, rather than their megalomaniac counterparts (complex policies, fixed outcomes and control mechanisms). This particular section is structured in small subchapters which examine Streets, Blocks, Platforms, Defaults and Activators, and the role that each can play in making massive small change. These subchapters include imaginary stories or hypothetical scenarios to make the various points: the value of the grid, making spaces at intersections, drawing up easily subdivided blocks, how dwellers can adapt their own places using codes and building systems, systems that nudge people into making positive choices and hence small changes, and how to trigger greater waves of change through assets and visions.

It is these last two subchapters, Defaults and Activators, that will be most exciting for urban designers to consider, as the earlier subchapters are a compendium of ideas that will already be familiar to those who have followed best practice projects in the UK for several decades, read Jane Jacobs, and understood the key messages of New Urbanism.

The final section, Change, shows how to start this whole process, including the basics (principles and purpose), levers (ideas, tools and tactics) and agency (transforming and enabling). Campbell, draws on Peter Senge's book *The Fifth Discipline* to stress that 'cities are living organisms, not machines' hence cultivating change is essential, and he provides both a manifesto and a declaration for Massive Small Change to promote the ideas further.

Throughout the book, the graphic style is persuasive and makes its messages easy to read; it therefore is likely to be readily adopted by many different readers. ●

Louise Thomas, independent urban designer

Study tour to Nantes and St. Nazaire

25th-29th April 2019

The Métropole of Nantes has undertaken a number of interesting regeneration schemes, the Ile de Nantes being the most celebrated. Its investment in culture and the arts has had an impact on the city and its economy is one of the most successful in France. St. Nazaire, formerly an important naval base is reinventing itself in close collaboration with its larger neighbour.

Sebastian Loew is organising a visit to these two cities. The cost is £320 (subject to airline price not changing) for a UDG member in a double room. It includes flight and accommodation on B&B basis. If you are interested in joining the tour, please contact him ASAP at sebastianloew@btinternet.com. Places are limited.

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See www.udg.org.uk/join

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Joined-up Insularity

I referred in the last Endpiece to Jane Jacobs' ideas about urban diversity, and I am drawn back to the subject again. Ever since reading *Death and Life* for the first time, in the final year of my architecture course, I have accepted as an axiom of urban design Jacobs' argument that cities manufacture diversity, and that a big urban concentration of people is necessary in order to create a diverse and rich range of activities and facilities. I experienced a small doubt about this when I passed a rocking horse manufacturer located in a tiny village in Shropshire. On the internet I see that, while rare, it is not unique; there are other rocking horse manufacturers, but none of them seems to be in a city.

But a recent visit to Orkney has caused me more serious doubts. Orkney has 20 inhabited islands, located remotely even from the far north of the Scottish mainland, and a population of 22,000. That is the same population as Godalming or Kenilworth. Yet Orkney has three gin distilleries, two breweries, two whisky distilleries, annual international science and arts festivals and an annual blues festival, seven airports, several museums, a weekly newspaper, and generates more than 100 per cent of its energy consumption from renewables. It also makes very good cheese and oatcakes, among other things. As I write this, I have just eaten an excellent shortbread from the Westray Bakehouse (established 1892) on the island of Westray (population 588).

Orkney does all of this and more without being a big and populous metropolis. It has only two small towns. It does all of this in fact precisely because it is small, isolated and dispersed, and therefore needs to generate its own diversity in order to sustain a good standard of living for its small population. Its historic isolation has also helped to create a distinctive independent Orcadian culture, which has shaped its autonomous diversity.

I don't know details of Orkney's economy, and you may object that its residents could not enjoy what they do without subsidies from Holyrood and a disproportionate amount of local democracy. In Birmingham I enjoy free bus transport, but if I were an Orkney resident, I would enjoy free ferry trips and plane journeys as well (not an unlimited number, but considerable). Nonetheless I think there is a lesson here that makes me question my orthodox reading of both Jane Jacobs' chapter on diversity and her later book *The Economy of Cities*. I wish she were here to explain how it works. Clearly not every settlement of 22,000 people can do what Orkney does. For one thing, many of them are dependent on a nearby city for a lot of their facilities. They do not have the needs which isolation presents. But I find Orkney an inspiring place, and a challenge to my long-held assumptions.

Incidentally, Stromness, the smaller of Orkney's two towns, has one of the most astonishing examples of a shared-space redesign of a main street that I have encountered. The quayside town is strung out along the A965, the main street, which has six different names along its 1.5km length. A dense row of buildings, their gable ends towards the quays, separates the street from the water. Heading for the campsite at the far end of town at Point of Ness, I drove around a right angle onto the street and immediately thought 'this isn't right, I shouldn't be here'. It is a narrow two-way street, in places only one vehicle's width between the buildings, and it proceeds through several sharp angles as it passes through the town. It is uniformly paved wall-to-wall with big stone flags, with an irregular band of granite setts running down the middle. I don't remember there being a single traffic sign or a column of any description along its entire length.

Nervously I continued to drive slowly in second gear, cautiously passing pedestrians. If the design intention is to make drivers uncomfortably aware of the danger they pose to other occupants of the space, it works. In the four days we spent in Stromness, I chose not to drive along it again, but bypassed it higher up the hill. But my partner Polly and I walked along it several times, feeling, as pedestrians, in charge of the space. It's a most enjoyable street. ●

Joe Holyoak, architect and urban designer

Two views of the A965 in Stromness, paved with stone flags and granite setts.

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