

HEALTHY CITY DESIGN INTERNATIONAL

RESEARCH • POLICY • PRACTICE

15-16 OCTOBER 2018

ROYAL COLLEGE OF PHYSICIANS, LONDON

FINAL PROGRAMME

CREATING HEALTHY CITIES FOR ALL:
DESIGNING FOR EQUITY AND RESILIENCE

W: www.healthycitydesign.global | E: info@salus.global

Organised by:



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Dear colleagues,

In less than 200 years, the proportion of the world's population living in cities has grown from 5 per cent to more than half. As our planet urbanises, how do we promote sustainable development, wellbeing and inclusive growth in creating cities and communities that are resilient, equitable and fair to all?

In their planning and design, cities have made undeniable progress in advancing the health of their citizens over the past 60 years. Within cities, however, health inequalities exist, and these are largely based on broader social inequalities. Cities have become polarised between rich and poor, public and private, engaged and excluded.

At the same time, unparalleled socio-economic progress and population growth have created patterns of highly inequitable, inefficient and unsustainable resource consumption, which are taking a heavy toll on the Earth's natural systems. The result is substantial health impacts, including reduction of food security and nutrition, loss of freshwater resources, higher exposure to communicable and non-communicable diseases, and loss of life from extreme weather events.¹

Creating cities that are fairer and less divisive places in relation to health outcomes depends on how resilient they are in their design and planning. Resilience can manifest in emerging infrastructures that promote flexible working practices or more active modes of transport, or in access to fresh, locally produced food. It can find expression in the adoption of new technologies that address climate change or air pollution. Healthcare systems in cities also need operational resilience, just as social resilience is itself a factor in creating better urban health.

Architects, planners, designers, clinicians, technologists, economists, policymakers and citizens all share a responsibility to create healthier cities that are both equitable and resilient. This is the theme of the second Healthy City Design International 2018 Congress, organised by SALUS Global Knowledge Exchange in collaboration with the Helen Hamlyn Centre for Design, Royal College of Art.

Compelling and challenging discourse

Healthy City Design 2018 features two days of high-level, insightful, provocative and entertaining presentations. Each day will open and close with keynote plenary sessions before splitting into three parallel streams (six in total). Day one will focus on: healthy homes and neighbourhoods; urban planning, resilience and renewal; and work and workplace. Day two will cover: sustainable development; placemaking and the public realm; and smart cities and mobility.

The event will host a poster gallery of innovative research and projects (pp20-21), and a knowledge-focused exhibition of design solutions for cities, communities and workplaces. The congress organisers are also delighted to invite participants to join the programme committee for a gala dinner and networking evening (p23) on Monday 15 October, featuring live entertainment from the Royal Academy of Music and a keynote address from Lord Andrew Mawson, a world-leading thinker in future city design.

1. The Rockefeller Foundation-Lancet Commission on Planetary Health: Safeguarding human health in the Anthropocene epoch. Lancet, 2015; 386: 1973-2028



Prof Jeremy Myerson

Helen Hamlyn Chair of Design
The Helen Hamlyn Centre for Design,
Royal College of Art



Marc Sansom

Director
SALUS Global Knowledge
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THE ROYAL COLLEGE OF PHYSICIANS

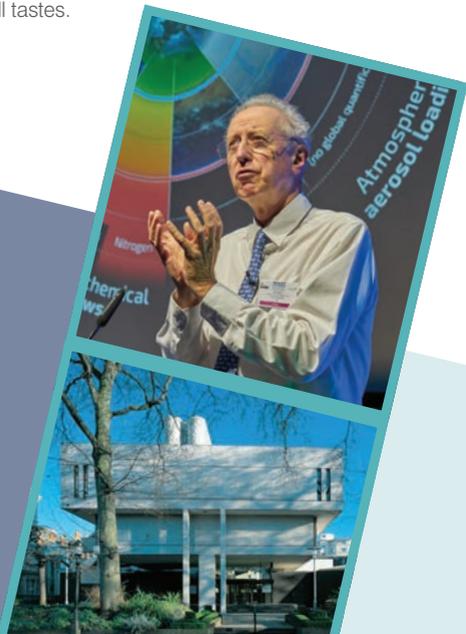
The second Healthy City Design International Congress, 15–16 October 2018, is being held, once again, at the prestigious headquarters of the Royal College of Physicians (RCP) in London.

Since its foundation in 1518, the RCP has had five headquarters in London. The current Grade 1 listed building in Regent's Park was designed by architect Sir Denys Lasdun and opened in 1964. Considered a modernist masterpiece, it's one of London's most important post-war buildings.

In 1992, Sir Lasdun was awarded the Royal Institute of British Architects' Trustee Medal in recognition of his work at the RCP, considered to be "the best architecture of its time anywhere in the world".

Sir Lasdun won the competition to design the new headquarters in 1959. He was surprised at being asked to design for such a traditional body, given his modernist philosophy, and he made it clear that he would not create a classical-style building. Ultimately, he responded to the challenge with a skilful integration of centuries-old traditions and his own vision.

As an award-winning and highly versatile venue for conferences, meetings, banquets, training and outdoor events, the building has an atmosphere of space and light, with stylish, modern architecture, and a selection of both old and new styles to suit all tastes.



The venue offers:

- **A central London location** – overlooking Regent's Park, with good access to road, rail and tube.
- **Magnificent conference and banqueting facilities** – tiered auditoriums, exhibition space, event and dining facilities, including the stunning Council Chamber and the 'jewel in the crown' – the Dorchester Library.
- **An award-winning Grade 1 listed modern building** – an atmosphere of space and light with a contrasting mix of old and new facilities.
- **A rare heritage collection** – with over 500 years of history and more than 50,000 antiquarian books.
- **High-quality food and service** – eclectic cuisine, bespoke menus and first-class service.
- **A professional venue for international conferences** – a member of Unique Venues of London, International Association of Conference Centres, and London and Partners, to name a few.
- **A private 'Physic Garden' for events** – filled with rare plants and flowers from all over the world, suitable for barbecues, receptions and al fresco dining.
- **A professional and friendly events team** – dedicated event managers, catering experts and technicians. Full support is provided before, during and following events.



GROUND FLOOR

Wolfson Theatre

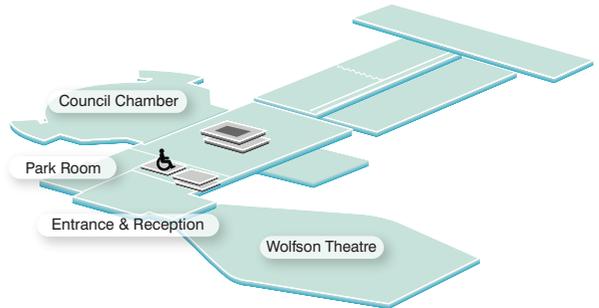
- Main conference plenary sessions and breakout sessions (Streams 1 and 4)

Council Chamber

- Breakout sessions (Streams 3 and 6)

Park Room

- Organisers' office



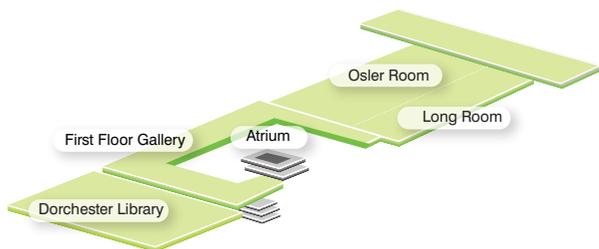
FIRST FLOOR

Dorchester Library

- Breakout sessions (Streams 2 and 5), breakfast and lunchtime workshops, and gala dinner

Long Room and Osler Room

- Lunch, poster gallery and knowledge space





08.00 REGISTRATION OPENS



Session 1: Opening keynotes

Chair: **Jeremy Myerson**, Royal College of Art, UK

08.45 **Welcome and introduction**

Jeremy Myerson, Royal College of Art, UK

09.00 **Keynote: Our planet, our health, our cities**

Dr Howard Frumkin, Head, 'Our Planet, Our Health' programme, Wellcome Trust, UK

09.30 **Keynote: Citizens' views of cities around the world**

Ben Page, Chief executive, Ipsos MORI, UK

10.05 **Panel discussion**

10.15-
10.45 **COFFEE, POSTER GALLERY AND KNOWLEDGE SPACE**



Session 2: Planning policy and practice

Chair: **Helen Pineo**, Institute for Environmental Design and Engineering, Bartlett School of Environment, Energy and Resources, University College London, UK

10.45 **Healthy New Towns: principles and practice**

Danny McDonnell MPH, Strategy advisor, Healthy New Towns (HNTs), NHS England, UK
Dr Sara McCafferty PhD, Senior strategy advisor, HNTs, NHS England, UK

11.05 **Connecting wellness, urban form, care models and health outcomes.
A Cranbrook Healthy New Town case study**

Simon Chant, Locum consultant in public health, communities, public health, environment and prosperity, Devon County Council, UK

Kenji Shermer, Urban designer, economy and development, East Devon District Council, UK

Jenny McNeill, Associate director of planning development, Northern, Eastern and Western Devon Clinical Commissioning Group, UK

11.25 **The role of design policy in healthy built environments**

Jane Threlfall, Principal urban designer, NSW Department of Planning and Environment, Government architect NSW, Australia

11.45 **Closing the implementation gap – securing public-private sector partnerships for healthy placemaking**

Michael Chang, Project and policy manager, TCPA, UK

Jennifer Offord, Senior planning manager, Redrow Homes, UK

Whitney Austin Gray, Senior vice-president, Delos, USA

12.05 **Panel discussion**

12.30-
14.00 **LUNCH, POSTER GALLERY AND KNOWLEDGE SPACE**



Session 3: Intergenerational community design

Chair: Dr Tarsha Finney, Royal College of Art, UK

14.00 **Multigenerational masterplanning: designing for wellbeing in new housing-led developments**

Dr Adam Park, Architect associate, architecture, BDP, UK

Andrew Smith, Principal, head of healthcare, and north region chair, BDP, UK

14.20 **Stop dividing us by age. Why building intergenerational housing and communities is not just nice to have but vital for our health and wellbeing**

Georgina Lee, Co-founder, The Age of No Retirement, UK

Carly Dickson, Architectural designer and researcher, The Age of No Retirement, UK

14.40 **Healthy city, healthy housing: seniors living independently together**

Ralph Rosenberg, Associate design principal, NK Architects, USA

15.00 **Panel discussion**

15.30-16.00 **COFFEE, POSTER GALLERY AND KNOWLEDGE SPACE**



Session 4: Designing for disadvantaged neighbourhoods

Chair: Janet Sutherland, The Academy of Urbanism, UK

16.00 **From care needs to health skills**

AnneMarie Eijkelenboom, Architect, EGM architects, Netherlands

16.20 **Tackling childhood obesity: a case study of hyperlocal inclusive design with the Stockwell Housing Estate in London**

Gail Ramster, Senior research associate, Helen Hamlyn Centre for Design, Royal College of Art, UK

Carmel Keren, Research associate, HHCD, Royal College of Art, UK

Dr Jak Spencer, Research fellow, HHCD, Royal College of Art, UK

16.40-17.00 **Panel discussion**



Session 5: Keynote

Chair: Richard Darch, Archus, UK

17.00 **Keynote: Democratising capital: the choice to invest in healthy communities**

Louise Wilson, Co-founder and joint managing director, Abundance Investment, UK

17.40 **Closing remarks**

17.45 **Close**

18.30-22.00 **Gala dinner, live music and keynote address**

Venue: Dorchester Library – see page 23 for details

Supported by



Stream 2 begins at 10.45 in the Dorchester Library, after the day's opening plenary session (08.45-10.15).



Session 6: Disaster planning and urban resilience

Chair: **Dr Layla McCay**, Centre for Urban Design and Mental Health; NHS Confederation, UK

- 10.45 **Preparedness and infrastructure for disaster and emergency situations: the key to a resilient city**
Noemi Bitterman, Director, Medical design graduate programme, industrial design, Technion, Israel
- 11.05 **From surviving to thriving: 'Home for all Seasons' – a model for resilient, healthy housing**
Fred London, Partner, JTP, UK
Ed Barsley, Director, The Environmental Design Studio, UK
- 11.25 **Technology's role in building urban resilience**
Elaine Trimble, Director, urban development, Siemens, UK
- 11.45 **Using theory from evolutionary biology to ground urban-scale intervention development: case studies from Zambia and Tanzania**
Robert Auger, Associate professor, infectious disease, London School of Hygiene & Tropical Medicine, UK

12.05 Panel discussion

12.30-14.00 LUNCH, POSTER GALLERY AND KNOWLEDGE SPACE

12.40-13.50 Lunchtime workshop: Visioning the healthy city: the role and value of planning and design guidance

Supported by: BRE, and Town and Country Planning Association

Chair: **Helen Pineo**, Lecturer in Healthy and Sustainable Built Environments, IEDE, Bartlett School of Environment, Energy and Resources, UCL, UK

Panel: **Michael Chang**, Project and policy manager, Town and Country Planning Association, UK

Dr Sara McCafferty PhD, Senior strategy advisor, Healthy New Towns, NHS England, UK

Giselle Sebag, Cities consultant, Bloomberg Consultants, USA

Jonathan Wilson, Principal, UK healthcare sector lead, Stantec, UK

Marcus Grant, Editor-in-chief, Cities & Health, UK



Session 7: Culture, community and place

Chair: Marcus Wilshere, IBI Group, UK

14.00 **The urban institution and the public space agenda: lessons in equity, inclusion and resilience from Toronto's Kensington Market**

Alice Liang, Principal, Montgomery Sisam Architects, Canada

Alexandra Boissonneault, Marketing and communications co-ordinator, Montgomery Sisam Architects, Canada

14.20 **Paths to health equality – a Glasgow city case study: connecting communities through the activation of residual space**

Alison King, Principal landscape architect, LUC, UK

Duncan McLean, Associate landscape architect, LUC, UK

14.40 **Processes and practices for performing city resilience in a healthy city**

Dr Patrick Duggan, Senior lecturer in theatre and performance, University of Surrey, UK

Dr Stuart Andrews, Senior lecturer in theatre and performance, University of Surrey, UK

15.00 **Panel discussion**

15.30 **COFFEE, POSTER GALLERY AND KNOWLEDGE SPACE**



Session 8: Design for social regeneration

Chair: Christine Hancock, C3 Collaborating for Health, UK

16.00 **Putting the 'social' back into regeneration: social regeneration and urban renewal in inner London**

Simon Bevan, Director of planning, London Borough of Southwark, UK

16.20 **This is how to design for isolation and loneliness in our communities**

Harry Knibb, Principal consultant, WSP, UK

16.40-17.00 **Panel discussion**

Stream 2 will be brought to a close at 17.00, whereupon delegates are invited to return to the Wolfson Theatre for the day's closing plenary session (17.00-17.45).



Stream 3 begins at 10.45 in the Council Chamber, after the day's opening plenary session (08.45-10.15).



Session 9: Supportive work environments

Chair: Mark Catchlove, Herman Miller, UK

10.45

Designing user-centred, supportive work environments and wellness programmes informed by structured measurement and psychology

Emely Broeker, Business psychologist, Arup, UK
Cat Dean, Business psychologist, Arup, UK

11.05

Future trends in urban mobility, public realm and working practices, and their influence on health and wellbeing in workplace design

Caroline Paradise, Associate director and head of design research, architecture and masterplanning, Atkins, SNC Lavalin, UK
Dr Wolfgang Schuster DPhil, Technical director – transportation, Atkins, SNC Lavalin, UK/Europe

11.25

Sensing of the sensors: designing to engage occupants in the workplace environment

Joyce Chan, Head of sustainable design, architecture and sustainability, HOK Architects, UK
Blanca Dasi Espuig, Sustainability specialist, HOK Architects, UK

11.45

Wellness matters – making the complex simpler. How the British Council for Offices is pulling down the barriers to health and wellbeing

William Poole-Wilson, Founder and director, Will+Partners, UK
James Pack, Founder and director, Sentinel RPI, UK

12.05

Panel discussion

12.30-14.00

LUNCH, POSTER GALLERY AND KNOWLEDGE SPACE



Session 10: Wellness design for workers

Chair: **Sean Hughes**, Philips, USA

14.00 **Comparing health-focused rating systems: WELL versus Fitwel**
Blake Jackson, Sustainability design leader, Stantec, USA

14.20 **Beyond workplace health: how businesses can impact community health and contribute to healthier cities for all**
Christine Hancock, Director, C3 Collaborating for Health, UK
Phil Veasey, Community engagement associate, C3 Collaborating for Health, UK

14.40 **Great Western Studios**
Paul O'Neill, Director, Bryden Wood, UK

15.00 **Panel discussion**

15.30-16.00 **COFFEE, POSTER GALLERY AND KNOWLEDGE SPACE**



Session 11: Designing for people and work

Chair: **Jeremy Myerson**, Royal College of Art, UK

16.00-17.00 **Workshop: Fundamental human needs and workplace wellness**
Mark Catchlove, Director, Insight Group, Herman Miller, UK
Bertie Van Wyk, Insight programme manager, Insight Group, Herman Miller, UK

This interactive workshop will explore new discoveries about human dynamics and work – all grounded in research and experiences. Our fundamental human needs – purpose, belonging, achievement, autonomy, status and security – will be discussed and defined. What are their levels of priority? What are the implications for management methods, technology and tools, and places? Looking beyond perceptions of generational diversity at work, how do we meet our fundamental needs through a combination of culture, technology and workplace design, and identify the barriers preventing the enhancement of wellness at work?

Stream 3 will be brought to a close at 17.00, whereupon delegates are invited to return to the Wolfson Theatre for the day's closing plenary session (17.00-17.45).

08.00 REGISTRATION OPENS



Session 12: Opening keynotes

Chair: **Sunand Prasad**, UK Green Building Council; Penoyre & Prasad, UK

08.55 **Welcome and introduction**

Chair: **Sunand Prasad PPRIBA**, Trustee, UK Green Building Council; Founding partner, Penoyre & Prasad, UK

09.00 **Keynote: The role of cities in improving population health: international insights**

Chris Naylor, Senior fellow in health policy, The King's Fund, UK

09.25 **Keynote: Sitopia – shaping healthy cities through food**

Carolyn Steel, Non-executive director, Kilburn Nightingale Architects, UK

09.50 **Panel discussion**

10.15-10.45 COFFEE, POSTER GALLERY AND KNOWLEDGE SPACE



Session 13: Green infrastructure, climate and health

Chair: **Rachel Cooper**, Lancaster University, UK

10.45 **Participatory system dynamics and health impact modelling for green infrastructure in London**

Nici Zimmermann, Lecturer, Institute for Environmental Design and Engineering (IEDE), UCL, UK
Philip Symonds, Research associate in complex built environment systems, IEDE, UCL, UK

11.05 **Examining the effectiveness and economic impact of a controlled environment agriculture (CEA) facility in London: a one-year prospective study**

Jamie Burrows, Founder and CEO, Vertical Future, UK

11.25 **Using green infrastructure to improve urban air quality (GI4AQ)**

Kirsti Ashworth, Royal Society Dorothy Hodgkin research fellow, Lancaster University, UK

11.45 **Which spatial characteristics of urban green spaces are beneficial for mental health?**

Dr Jacob King, Research associate, Centre of Urban Design and Mental Health, UK

12.05 **Panel discussion**

12.30-14.00 LUNCH, POSTER GALLERY AND KNOWLEDGE SPACE



Session 14: Inclusive design for social and health equity

Chair: **Katie Wood**, Arup, UK

14.00

Can affordable and sustainable housing be the keystone to social mobility?

Mike Nightingale, Founder, The Mike Nightingale Fellowship; Consultant, IBI Group, UK

Elizabeth Petrovitch, Senior interior designer and architect, IBI Group, UK

14.20

"I don't like nature": defining nature for healthy, inclusive urban green spaces

Dr Bridget Snaith, Department of Architecture and Visual Arts, University of East London, UK

14.40

Integrating social equity into practice

Michael Austin, Campus planner and urban designer, and associate, Cities+Sites, Perkins+Will, USA

Ingrid Stromberg, LEED green associate, Cities+Sites knowledge manager, and associate, corporate, Perkins+Will, USA

Rebecca Holt, Sustainable building advisor, and associate, Cities+Sites, Perkins+Will, USA

Tim Wolfe, Deputy finance director, Department of Education and Early Learning, City of Seattle, USA

15.00

Panel discussion

15.30-
16.00

COFFEE, POSTER GALLERY AND KNOWLEDGE SPACE



Session 15: Green-blue urban transformation

Chair: **Clare Devine**, Design Council, UK

16.00

Infrastructure investment as a trigger for social inclusion and placemaking

Dr Val Kirby, Convener, Stroudwater Navigation Connected Cotswold Canals Trust, UK

Prof Hugh Barton, Emeritus professor of planning, health and sustainability, WHO Collaborating Centre for Healthy Urban Environments, UK

16.20

Everyday green infrastructure in an age of austerity: making the case for green space and wellbeing

Dr Julian Dobson, Researcher, University of Sheffield, UK

16.40-
17.00

Panel discussion



Session 16: Closing keynote

Chair: **Jeremy Myerson**, Royal College of Art, UK

17.00

Keynote: Improving health through the circular economy

Sunand Prasad PPRIBA, Trustee, UK Green Building Council;

Founding partner, Penoyre & Prasad, UK

17.40

Closing remarks

Jeremy Myerson, Royal College of Art, UK

17.45

Close

07.30-08.45

Breakfast workshop: Future-ready healthcare in the city: how future-ready are cities to support the healthcare needs of their citizens?

Presenters: **Harry Knibb**, Principal consultant, WSP, UK
Simon Kydd, Director – head of healthcare, WSP, UK
Gail Ramster, Senior research associate, Helen Hamlyn Centre for Design (HHCD), Royal College of Art, UK
Dr Gerard Briscoe, Research associate, HHCD, Royal College of Art, UK

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THE HELEN HAMLYN CENTRE FOR DESIGN

Stream 5 begins at 10.45 in the Dorchester Library, after the day's opening plenary session (08.55-10.15).



Session 17: Designing active places and streets

Chair: **Marcus Grant**, Cities and Health, UK

10.45

The future of cities, health and the street

Catherine Simpson, Senior urban designer, RobertsDay; Queensland University of Technology, Australia

11.05

Designing public places in social inequality contexts: lessons from the Baobab Garden at Recife, Brazil

Circe Gama Monteiro, Professor (Full), architecture and urbanism, INCITI – Federal University of Pernambuco, Brazil

11.25

Healthy high streets – good placemaking in an urban setting

Andre Pinto, Public health manager (Healthy Places Unit), Public Health England, UK
Sorcha Daly, Research fellow, Institute of Health Equity (IHE), UCL, UK

11.45

Using active design principles to create healthier communities: theory and practice

Chris Burgess, Associate, technical, Greengage, UK
Rob Miller, Associate, technical, Greengage, UK
Rob Holt, Strategic planner, Sport England, UK

12.05

Panel discussion

12.30-14.00

LUNCH, POSTER GALLERY AND KNOWLEDGE SPACE

12.40-13.50

Lunchtime workshop: Developing resilient, healthy and socially inclusive neighbourhoods

Supported by: The Academy of Urbanism, and Housing Learning and Improvement Network

Chair: **Clare Wildfire**, Technical principal, Mott MacDonald, UK
Panel: **Jeremy Porteus**, Managing director, Housing Learning and Improvement Network, UK
Janet Sutherland, Director, The Academy of Urbanism, UK
Frances Parrott, Consultant, economic and social development, Mott MacDonald, UK
Catriona Brady, Head, Better Places for People campaign, World Green Building Council, UK



Session 18: Designing for children and childhood

Chair: **Carolyn Daher MPH**, Barcelona Institute for Global Health, Spain

14.00 **Guidelines and methods for building child-responsive cities and communities**
Giselle Sebag, Cities consultant, urban planning and public health, Bloomberg Associates, USA

14.20 **Designing for urban childhoods**
Samuel Williams, Consultant, operations consulting, Arup, UK

14.40 **Child-friendly urban planning: lessons from cities in Canada and Europe**
Tim Gill, Independent researcher, Rethinking Childhood, UK

15.00 **Panel discussion**

15.30-16.00 **COFFEE, POSTER GALLERY AND KNOWLEDGE SPACE**



Session 19: Designing liveable communities

Chair: **Tye Farrow**, Farrow Partners, Canada

16.00 **Anatomy of healthy spaces: insights and solutions**
Richard Mazuch, Director of design research and innovation, IBI Group, UK
David McKenna, Studio associate director and landscape architect, IBI Group, UK

16.20 **Food hubs: the role of placemaking in creating healthy communities**
Celen Pasalar, Assistant professor of landscape architecture, College of Design, North Carolina State University, USA
George Hallowell, Assistant professor of the practice in architecture, College of Design, North Carolina State University, USA

16.40-17.00 **Panel discussion**

Stream 5 will be brought to a close at 17.00, whereupon delegates are invited to return to the Wolfson Theatre for the day's closing plenary session (17.00-17.45).

Stream 6 begins at 10.45 in the Council Chamber, after the day's opening plenary session (08.55-10.15).



Session 20: Digitalising the healthy city

Chair: **Derek Clements-Croome**, University of Reading, UK

-
- 10.45** **Heart Safe City programme: activating the community to save lives using smart digital technologies**
Sathyan Vaidyanathan, New business development, cardiology solutions, Philips, UAE
Sean Hughes, Head of design, Philips, USA
-
- 11.05** **Project CityZen – designing health opportunities for Brazil's cities**
Michael Wilkinson PhD, CEO, Inavya, UK
-
- 11.25** **Designing healthy high-density urban environments – a toolkit for success**
Mina Hasman, Associate, architecture, Skidmore, Owings & Merrill (SOM) (Europe), UK
Meiring Beyers, Co-founder, director, engineering, Klimaat Consulting & Innovation, Canada
Daniel Ringelstein, Director, urban planning, SOM (Europe), UK
-
- 11.45** **Lifespace mobility among community-dwelling older adults in Singapore**
Ho Soon Hoe, Research officer, Geriatric Education and Research Institute (GERI), Singapore
Wong Chek Hooi, Deputy exec director, GERI, Singapore
-
- 12.05** **Panel discussion**
-
- 12.30-14.00** **LUNCH, POSTER GALLERY AND KNOWLEDGE SPACE**



Session 21: Sustainable urban mobility

Chair: Harry Knibb, WSP, UK

14.00 **Travel, approach, enter! A three-step framework to analyse and co-create inclusive public space**

Marianne Halblaub Miranda, Research associate, Department of Architecture, Technische Universität (TU) Darmstadt, Germany

14.20 **The urban road network: a public health asset**

Megan Streb, Partnership manager, south, Sustrans, UK

14.40 **Elevating humanity to optimise the mobility revolution**

Beth Zacherle, Strategic innovation designer, HDR, USA
Kaia Nesbitt, Development practice leader, HDR, USA

15.00 **Panel discussion**

15.30-16.00 **COFFEE, POSTER GALLERY AND KNOWLEDGE SPACE**



Session 22: Accessible urban mobility for all

Chair: Dr Stephane Sadoux PhD, LabEx AE&CC, Grenoble Alpes University, France

16.00 **Mobility and travel: designing accessible, affordable, clean and safe systems to travel**

Brian Niven, Technical principal, health advisory, Mott MacDonald, UK

16.20 **Urban mobility policies and extra-small and low-cost interventions for promoting quality of urban life of people with Autism Spectrum Disorder**

Giulia Tola, PhD student, Department of Architecture, Design and Planning, Alghero, University of Sassari, Italy

16.40-17.00 **Panel discussion**

Stream 6 will be brought to a close at 17.00, whereupon delegates are invited to return to the Wolfson Theatre for the day's closing plenary session (17.00-17.45).

Hosted in the Osler and Long Rooms, the poster gallery offers a chance to learn about many inspiring research and design projects, enriching the oral sessions. To view the digital posters and their abstracts, visit www.salus.global/journal and join the SALUS community for free as an individual member.

P01 Healthy placemaking: finding our strengths

Marcus Grant (UK)

P02 A Plan for a Healthy Old Kent Road: moving social regeneration from theory to action to impact

Simon Bevan (UK), Professor Kevin Fenton (UK)

P03 A clear route map towards healthy buildings

Harry Knibb (UK)

P04 Jographies: using urban and green infrastructure to encourage running

David McKenna (UK)

P05 Capturing community voices, putting the social into regeneration

Professor Kevin Fenton (UK), Jin Lim (UK)

P06 Using i-Tree to inform a strategic approach for future management of Ealing's urban forest

Ellen Osborne (UK), Kenton Rogers (UK), Kieron Doick (UK), James Watson (UK)

P07 The community wellbeing tree: an ecological framework for community wellbeing

Andy Pennington (UK), Peter Kinderman (UK), Jane South (UK), Anne-Marie Bagnall (UK), Rhiannon Corcoran (UK),

P08 Designing for individual health – how can designers use emotions to promote positive behaviour change?

Stephanie Hewitt (UK)

P09 Connected by design: best practices for human connectivity in an increasingly disconnected urban world

Peter Mandeno (UK), Weston Baxter (UK), Marco Aurisicchio (UK)

P10 Designing accessible, clean and safe systems to travel

Jo Baker (UK), Julie James (UK), Brian Niven (UK)

P11 Spatial planning for health: an evidence resource for planning and designing healthier places

Andre Pinto (UK), Dr Paul Pilkington (UK), Emma Bird (UK), Janet Ige (UK)

P12 Building a healthier, happier, better connected and more prosperous West Midlands

Rebecca Willans (UK), John Berry (UK), Karen Saunders (UK), Simon Hall (UK), Deborah Harkins (UK), David Warburton (UK)

P13 Equity in amenities: corollary to urban housing in India

Sridevi Rao (India)

P14 Stimulating active usage of open spaces through urban acupuncture – insights from Darmstadt

Gladys Vasquez Fauggier (Germany), Marianne Halblaub Miranda (Germany), Martin Knöll (Germany)

P15 Data, data everywhere but not a space to think

Philip Symonds (UK), Paul Wilkinson (UK), Michael Davies (UK), Nicole Zimmermann (UK)

P16 The healing power of green spaces

Alicia Gomez Jimenez (UK)

P17 Designing for air quality and health

James Bellinger (UK)

P18 Mapping climate disadvantage for London's care provision

Anna Mavrogianni (UK), Eleni Oikonomou (UK), Rokia Raslan (UK), Adam Dennett (UK)

P19 Wellbeing and social ergonomics in workplace design

Mark Catchlove (UK), Bertie Van Wyk (UK)

P20 Inspirational, not institutional: the impact of desirable accessible design

Edward Warner (UK), Carly Dickson (UK)

P21 Integrating health assessment into spatial planning and major developments

Jenny Dunwoody (UK)

P22 Wellbeing, inequality and the role of urban form

Aissa Sabbagh (UK), Dr Chris Boyko (UK)

P23 Churchwood Gardens

Rosa Gimeno (UK), Paul O'Neill (UK)

P24 Closed hospitals don't just disappear

H Scot Latimer (USA), Randy Guillot (USA)

P25 Designing for the challenges of life: learning from palliative care settings

Susanne Siepl-Coates (USA),
Sally J Augustin (USA)

P26 Building healthy cities

Ben P Lee (USA), Erin Sharp Newton (USA)

P27 Could urban national parks deliver salutogenic cities?

Tim G Townshend (UK), Maggie Roe (UK),
Clive Davies (UK)

P28 Healthy placemaking: breathing life into our cities

Fred London (UK), Rebecca Taylor (UK)

P29 Promoting healthier cities, towns and communities in the province of Barcelona

Josep R Torrento (Spain),
Eloi Juvillà (Spain), Sonia Chavero (Spain),
Catalina Chamorro (Spain)

P30 The utility of case studies in building an evidence base for improving public health

Rebecca Willans (UK), Karen Saunders (UK)

P31 From fictional cities to the cities of tomorrow: the need to green and redesign an urban world for a sustainable future

Francesco Papa (UK)

P32 Fitzpark: demonstrating the value of green space through temporary public realm installations

Emily Woodason (UK), Lidia Lewis (UK),
Simon Green (UK)

P33 Playful distractions to improve wellbeing in urban design: a case study from pop-up interactive art installations along the River Foyle in Derry/Londonderry, Northern Ireland

Dr Jak Spencer (UK), Ralf Alwani (UK),
Dr Jo-Anne Bichard (UK), Jonathan West (UK)

P34 Global Healthcare Index: future-readiness for health challenges

Dr Gerard Briscoe (UK)

P35 Our Stockwell: tackling childhood obesity through design

Carmel Keren (UK)

P36 Building with care: architecture for later life

Mikaela Patrick (UK)

P37 Undone: fashioning stroke rehabilitation

Laura Salisbury (UK)

P38 Creative leadership

Rama Gheerawo (UK), Dr Ninela Ivanova (UK),
Dr Melanie Flory (UK), Luka Kille-Specker (UK)

P39 Domestic digital: understanding new patterns of work-life

Robert Thorpe (UK)

P40 Soft: investigating the intersection between textile design and wearable technology

Claire Felicity Miller (UK)

P41 Gamechange: immersive virtual reality to transform the lives of patients with psychosis

Paul Eliasz (UK), Indira Knight (UK)

P42 Curating opportunities: invitations for inclusive exhibition design

Katrine Hesseldahl (UK)

P43 Design and the mind: co-creating with neurodiverse people

Natasha Trotman (UK)

P44 Applying participatory system dynamics in planning for green infrastructure and health

Nici Zimmermann (UK), Phil Symonds (UK)



Healthy Cities - The Movement, Greenwich

The Movement comprises a major regeneration scheme at the heart of Greenwich, London, the aim being to catalyse the local economy, creating value and growth in the local community. The total development comprises 180 affordable new homes, a 350 bed student village, associated employment space, 2 new hotels, a community centre extension, bike café, health & fitness club, convenience store, employment incubator units, parking, and an FM and Community Energy Centre.

A unique, quality and accessible public realm has been created in the centre of Greenwich, creating a legible and coherent urban design, linking in with the DLR and mainline station. This masterplan delivers a vibrant, inclusive and sustainable mixed-use community based upon cultural, social and economic diversity, whilst recognising the need to generate value. Ground breaking energy performance standards have been achieved through extensive use of HLM's Dynamic Simulation Modelling.

GALA DINNER, LIVE MUSIC AND KEYNOTE ADDRESS

Monday 15 October, Dorchester Library
18.30-22.00

Keynote speaker:

Lord Andrew Mawson OBE

Executive chairman, Well North
Director, Andrew Mawson Partnerships

Taking place on the first evening of the congress, in the Dorchester Library, the gala dinner will be an opportunity for delegates to network informally with members of the programme committee, as well as enjoy a mouth-watering three-course meal and a live classical musical performance from the Royal Academy of Music.

Since its foundation in 1822, the Royal Academy of Music has made an inestimable impact on the musical landscape, both in the UK and abroad. Indeed, it has permeated the music profession at all levels, with Academy alumni including classical giants Sir Simon Rattle and Sir Harrison Birtwistle, along with pop stars Sir Elton John and Annie Lennox.

During the evening, Lord Andrew Mawson, a dazzling and enthralling public speaker, will deliver a keynote address on the importance of urban health and community development.

Lord Mawson founded the internationally renowned Bromley-by-Bow Centre nearly three decades ago. Successive governments have used this, along with many of his other pathfinder projects, as national exemplars for successful community regeneration. His development of an integrated working model – involving health, education, housing, business and enterprise – has received international recognition.

Lord Mawson believes in building strong, vibrant communities, and in the unique gifts of every individual in the community. Through his organisation, Andrew Mawson Partnerships, he acts as a social broker and placemaker.

The organisers wish to thank HLM and Llewelyn Davies for sponsoring the gala dinner and networking evening.



Panel:



Harry Knibb (UK)
Principal consultant, WSP



Simon Kydd (UK)
Director – head of healthcare, WSP



Gail Ramster (UK)
Senior research associate, Helen Hamlyn Centre for Design, Royal College of Art



Dr Gerard Briscoe (UK)
Research associate, Helen Hamlyn Centre for Design Royal College of Art

BREAKFAST WORKSHOP:

Future-ready healthcare in the city: how future-ready are cities to support the healthcare needs of their citizens?

**Tuesday 16 October,
Dorchester Library, 07.30-08.45**

Organised by the Helen Hamlyn Centre for Design, Royal College of Art and WSP, this breakfast roundtable discussion is an opportunity for leaders in health, healthcare, and city planning and design to debate what it means for cities to be “future-ready” – to deliver healthcare systems and services that are joined-up with city planning and approaches to improving public health.

The workshop is an opportunity to discuss and debate what the future of healthcare looks like for cities around the world, answering such question as:

- What are some of the big challenges facing healthcare now and into the future? And what are the biggest transformation opportunities?
- How is healthcare predicted to change and which changes are considered most desirable and important?
- What are the key criteria that a healthcare system must meet to address the needs of a city's population? How might these criteria change?
- What factors in the building industry and other parties should be considered that have a substantial impact on healthcare provision?

Organised by



LUNCHTIME WORKSHOP:

Visioning the healthy city: the role and value of planning and design guidance

**Monday 15 October,
Dorchester Library, 12.40-13.50**

This session aims to build on the World Health Organisation's vision for a healthy city, exploring what a modern healthy city should look like and how we'll know if it has been achieved.

The workshop will consider the role and purpose of evidence-based guidance in delivering and applying this vision in practice.

Supported by



Chair:



Helen Pineo (UK)

Lecturer in Healthy and Sustainable Built Environments, IEDE, Bartlett School of Environment, Energy and Resources, University College London

Panel:



Michael Chang (UK)

Project and policy manager, Town and Country Planning Association



Dr Sara McCafferty (UK)

Senior strategy advisor, Healthy New Towns, NHS England



Giselle Sebag (USA)

Cities consultant, Bloomberg Consultants



Jonathan Wilson (UK)

Principal, UK healthcare sector lead, Stantec

LUNCHTIME WORKSHOP:

Developing resilient, healthy and socially inclusive neighbourhoods

**Tuesday 16 October,
Dorchester Library, 12.40-13.50**

The design of cities, districts and neighbourhoods can have a significant impact on how easy it is for residents to make healthy lifestyle choices. In supporting health and wellbeing, suitable housing only goes so far.

This workshop will explore how to enable more sustainable living, reduce social isolation, build neighbourhood resilience, and protect the health of future generations.

Supported by



Chair:



Clare Wildfire (UK)

Technical principal, Mott MacDonald

Panel:



Jeremy Porteus (UK)

Managing director, Housing LIN



Janet Sutherland (UK)

Director, Academy of Urbanism



Frances Parrott (UK)

Consultant, economic and social development, Mott MacDonald



Catriona Brady (UK)

Head, Better Places for People campaign, World Green Building Council



Dr Howard Frumkin
(UK/USA)

Head, 'Our Planet,
Our Health' programme,
Wellcome Trust

Keynote: Our planet, our health, our cities

The world will need to produce 60 per cent more food by 2050, assuming current trends in diets and population growth continue. More than two-thirds of the world's population is expected to live in cities by 2050, by which time climate change could be responsible for 250,000 deaths a year.

Our planet is changing in unprecedented ways and which directly threaten human health. Such changes also bring opportunities to protect and improve health, if we can respond appropriately.

Since 2015, the Wellcome Trust's 'Our Planet, Our Health' programme has supported a community of researchers in taking on the challenges that food systems, increasing urbanisation, and climate change pose to our health. We aim to stimulate research excellence and develop global collaborations to drive change. Our areas of focus are as follows:

Climate change: Acting on climate change requires both primary prevention (ie, reducing its effects on health – mitigation), and preparedness and response (ie, adapting to its impact – adaptation). These responses must be designed and implemented to protect health as best we can, while also improving social equity. We offer Climate Change and Health Awards – open to researchers who want to better understand the links between climate change and health. We've also linked up with the *Lancet* to set up the Lancet Countdown, an international research collaboration that tracks global progress on climate change.

Global food systems: With the world's population growing, current ways of producing food are unsustainable. What we eat is also leading to problems, with poor nutrition a major cause of illness around the world. Wellcome is a founding partner of the EAT Foundation, which brings together scientists, businesses and policymakers to transform food systems. We've also invested £10.3 million in two research partnerships looking at how to create healthier food systems.

Urban environments: As urban populations grow, so do rates of infectious disease, drug resistance, pollution, and waste. We've invested £17.8 million in research looking at how urban design and policy can improve health. Our research partnerships are investigating what makes cities healthy and sustainable, as well as how water management can be built into urban design.

Keynote: Citizens' views of cities around the world

Research carried out a couple of years ago by Ipsos MORI and experts for Innovate UK found that citizens want technology to make life in our future cities easier, but they also want equality of access and social interaction to be prioritised.

Called the Future Cities Dialogue, this research engaged urban citizens in potential future urban scenarios. Three workshops took place, focusing on possible future outcomes of six urban systems (energy, food, health, transport, waste and water). All participants were then invited to a summit, where all six systems were brought together into integrated future scenarios.

Ten key principles emerged, which took account of participants' preferences for the future cities they desired:

- services should cater for all, with no one left behind owing to lack of access to technology or resources;
- technology shouldn't lead to us losing skills or make us 'dumb' by removing choice;
- greater local involvement in running services is desired, but government oversight is still preferred for some systems;
- innovation should spark grassroots innovation, bringing communities together and encouraging sharing of resources;
- online can improve efficiency but this shouldn't be at the expense of face-to-face interaction;
- technology shouldn't be obtrusive but allow freedom to ignore 'nudges' from smart devices;
- systems integration will result in increased sharing of data, with benefits such as more targeted services, but data must be stored and transferred securely;
- integration should use resources efficiently, making greater use of renewable energy sources and reusing waste;
- innovation should support socialising, and art and culture; and
- food should retain its naturalness, for health as well as social and cultural reasons.

This keynote will build on this research and give delegates insight into citizens' views of cities across the globe.



Ben Page (UK)
Chief executive,
Ipsos MORI



Danny McDonnell
MPH (UK)

Strategy advisor, Healthy New Towns (HNTs), NHS England



Dr Sara McCafferty
PhD (UK)

Senior strategy advisor, HNTs, NHS England

Co-authors:

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Strategy manager, HNTs, NHS England

Harry Dodd MRTPI (UK)

Strategy analyst, HNTs, NHS England

Healthy New Towns: principles and practice

NHS England's Healthy New Towns (HNTs) programme is working with new housing developments to explore the potential of embedding ill health prevention and promoting greater choices and opportunities for healthier living, alongside integrated health and care services based on local needs.

Method: Ten demonstrator sites, announced in March 2016, are implementing a range of interventions in line with commitments made to upgrade prevention and re-think the delivery of care, as set out in the NHS Five Year Forward View strategy. Sites have been supported to take a 'whole systems' approach to how health and wellbeing should be promoted, and services should be designed and delivered. Sites have delivered local programmes in partnership across local government, NHS, developers, the voluntary sector, and the communities themselves.

A package of support from NHS England and partners has included: specific technical support from a range of national partners; access to other cross-government expertise and funding opportunities; and resource to fund local capacity to engage with the programme. Support partners, including the Town and Country Planning Association, the King's Fund, the Young Foundation, and PA Consulting, are supporting the development and dissemination of the evidence and best practice guidance.

Outcomes: A set of Healthy New Towns principles will be announced ahead of detailed guidance to disseminate learning and best practice from the programme. The HNTs Network for developers and housing associations will lead the way in implementing the principles and putting the learning into practice.

Outputs will include economic analysis of discrete interventions, synthesis of international evidence, and rich in-depth case studies. The specific metrics and data that will be used to evaluate contemporaneous and long-term outcomes are still being scoped across sites.

Implications: Outcomes are expected to: describe how the NHS can work better with local government, planning and development sectors to support the creation of healthier places; influence government policy on health, housing and NHS land; and encourage developers and housing associations to prioritise health in their developments.

Connecting wellness, urban form, care models and health outcomes: Cranbrook Healthy New Town case study

Cranbrook sits in the Exeter and East Devon Growth Point, and is one of 10 national demonstrators of the NHS Healthy New Towns programme. This explores how to deliver new care models and reshape planning decisions for sustainable healthy environments in areas of new housing development.

Application: The NHS, local authorities, primary care and public health are working with Space Syntax to explore interactions between urban form, care models and health outcomes in a city, and apply these to design-out poor health and design-in new care models in a new town. Looking at how people live their lives and the impact on their health creates an opportunity to shape health and housing planning locally and nationally, linking:

- An Integrated Urban Model (IUM) for Exeter and Cranbrook. This provides a model of the built environment, combining spatial data on streets, spaces, public transport, land-use and employment density, to measure accessibility, walkability and car dependence.
- A comprehensive health risk stratification model. The area-based measures from this Exeter model separate populations into high, low and rising risk groups for different health outcomes.

The Cranbrook planning team is using this to inform planning negotiations, underpin planning policy, and redesign the masterplan.

Outcomes: Analysis highlighted areas of Exeter with higher levels of frailty and ill health than predicted by their demographic and socio-economic profile. The IUM revealed that these areas shared characteristics of urban form and observed correlations with obesity. Consequently, planners have negotiated revised street layouts, changed locations of land uses, and increased housing density. The risk model is being rolled out across Devon. The next steps are to link data and evaluation processes locally, which will enable more detailed analysis to inform future build, street design and service provision.

Implications: The findings improve the housing and health planning evidence base, applying sustainable solutions to the “wider determinants of health” to improve health, wellbeing and quality of life, and reduce inequality. They present opportunities to improve planning processes, and the location and design of developments to create healthy, resilient places.



Simon Chant (UK)

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Associate director of planning development, Northern, Eastern and Western Devon Clinical Commissioning Group

Co-author:

Lucy O’Loughlin (UK)

Public health specialist, communities, public health, environment and prosperity, Devon County Council



Jane Threlfall (Australia)
Principal urban designer, NSW
Department of Planning and
Environment, Government Architect
NSW

The role of design policy in healthy built environments

This paper focuses on two policies developed by the Government Architect NSW (GANSW) – Better Placed and Greener Places – which advocate for shared responsibility in creating healthy cities.

Purpose: Better Placed is the integrated design policy for the built environment of NSW, which advocates for good design processes and outcomes to create better places for people. Launched in August 2017, the policy establishes a baseline of what is expected to achieve good design across all projects in NSW.

Good design creates places that provide value and health benefits for people, the place and natural environments. It aims to encourage a culture change to the way that healthy city design is considered in NSW. In this way, it advocates for the importance of design for better places; supports industry and government to deliver good design; and enables effective design processes to be established and supported in the planning system. It provides clear objectives to achieve good design throughout the development process, along with a framework for examining places and reviewing proposals from a good design perspective.

Better Placed defines a well-designed built environment as healthy, responsive, integrated, equitable and resilient, all of which contribute to healthy built environments.

Greener Places is a draft policy to guide the planning, design and delivery of green infrastructure in urban areas across NSW. Green infrastructure cools the urban environment, cleans the air, and provides space for recreation, sport and active living, as well as space for local food production. The policy describes four principles that constitute well-designed green infrastructure – integration, connectivity, multi-functionality and participation – which can be adopted to work towards desired outcomes.

Implementation: The NSW Government has tasked GANSW with leading strategies to implement the two policies to deliver improved health outcomes through well-designed built environments. A change in culture is a key aspect of implementing improved health outcomes through design. By establishing clear objectives, these form a common basis from which a wide audience can advocate for the importance of good design in health outcomes. The objectives also form the basis for which more detailed evaluation criteria can be established to assess projects to meet health priorities.

Closing the implementation gap – securing public-private partnerships for healthy placemaking

The context for population health and wellbeing in the 21st century is different to when the National Health Service and the planning system were established 70 years ago. Given limited public funds and a deregulated planning system, the private sector will be asked to do more to help, by providing services or facilities to meet wider social objectives. The starting proposition is what does an effective public-private partnership look like to realise healthy places through the development process? And how can you demonstrate the commercial value to residential and commercial developers? While there is no “one-size-fits-all” solution, there is consensus to promoting sustainable movement, quality green spaces, healthy food environments, healthy buildings, and wellness infrastructure.

Local government realises that to achieve significant change it needs to involve developers and, therefore, understand more about how to do this. There is increasing acceptance that in a market-led system, private-sector developers finance and create places while the public sector provides the policy framework and consent to build. Academic health evidence isn't sufficient to make the business case. This session will draw on industry-initiated research on how and what healthy development interventions can increase development value, combined with insight on how to overcome implementation barriers. Most financial decisions have already been made by the time health issues are considered. Making use of the right evidence at the right development stage is crucial.

Outcomes: There are many important intangibles that contribute to value. Because markets do not trade explicitly in these things, it's hard to identify and quantify their value. Intangible factors in health, happiness and wellbeing have the potential to keep the cost of health services affordable and are only now becoming better recognised. Developers are interested in innovative practice and are already aware they can add value to schemes by including “healthy” elements. There is consumer-driven demand for good design or inclusion of green spaces in developments. This session highlights evidence of the association between house prices and proximity to public transport links, and how development values can be greater in areas with easy access and proximity to lifestyle conveniences.

Implications: Public-private partners are in general agreement that by working together they can contribute to reducing poor health and significantly increase mutual benefits for all those involved in a development.



Michael Chang (UK)
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Multigenerational masterplanning: designing for wellbeing in new housing-led developments

As the UK population continues to age, new medium-scale and large-scale housing developments will increasingly need to incorporate a range of dwelling types to reflect the needs of the older population. This need is driven, in part, by market-led demands of older people, but also the requirements of local planning policy and strategic housing market assessments.

Research has also demonstrated that as people grow older, the role of the home and local neighbourhood becomes increasingly significant in supporting wellbeing and quality of life. This will mean different things depending on an individual's or household's situation, but might include: future mobility needs; access to public transport; high-quality open space that encourages active lifestyles; integration in a supportive multi-generational community; or simply having a view over attractive greenspace.

Despite this, previous research has highlighted that the supply of high-quality housing for older people has been stymied by a lack of joined-up policy, shortage of resources, and a focus on delivering other forms of housing.

This paper presents design work from a multidisciplinary practice, demonstrating how adaptable homes (downsizer housing) and housing with care (retirement or specialist housing) can be integrated at the heart of a sustainable development. The case-study projects featured in this paper include the developments at Lowfield Green, York (with City of York Council), and Sheerwater, Woking (with Thamesway Developments and Woking Borough Council).

The paper reports on how these wellbeing frameworks have been employed in the masterplanning and design process, and negotiated with other stakeholders to balance competing concerns of density, viability and profitability.

The paper goes on to discuss challenges in the delivery of these projects on the ground, and puts forward proposals for how frameworks of wellbeing might be used as part of an ongoing post-occupancy evaluation to test whether the design aspirations for the projects have been met. It concludes by putting forward a series of learning points to spread best practice within the design and development process.

Stop dividing us by age. Why building intergenerational housing and communities is not just nice to have but vital for our health and wellbeing

In a large-scale survey of people from 18 years of age through to 99, housing was the one sector that failed consistently against all of our 10 principles of intergenerational design. It was also seen as the sector that caused the most tension and frustrations across all ages. The fact that housing is an all-age tension is both a challenge and opportunity for developers, architects, designers, local authorities and, indeed, all of us to rethink what we have.

Our research showed that most people want to live in fully integrated, all-age, communities, yet most of our housing options isolate us from society. Eighty-eight per cent of people of all ages surveyed said it was their values, needs and interests that were important, not their age. This provided the foundations for our work in Totnes.

Through workshops, in-depth interviews, observations and surveys, we began to understand the desires and requirements of local people and potential new residents, as we sought to provide recommendations for integrating a new development of people of all ages in the existing Totnes community. We challenged everyone to rethink what they knew about how people want to live in later life:

- to spend as much time thinking about creating workspaces and engaging activities as care provision and support facilities;
- to create communities with purpose and values; and
- to rethink the linear life view – education / work / retirement – as it becomes increasingly redundant.

Through this project, we're bringing together marketers, planners, builders, architects, designers and the local community to rethink intergenerational housing, not only for the site in Totnes but as a new model for the rest of the UK. Our work with Totnes is an opportunity to challenge and empower older adults to remain active, continue learning and contributing – making the most of their valuable knowledge, experience and time.

By creating places to live that work for all ages we're demonstrating the power of intergenerational housing and community for economic, societal and individual wellbeing.



Georgina Lee (UK)
Co-founder,
The Age of No Retirement



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and researcher,
The Age of No Retirement



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Principal and chief financial officer,
NK Architects

Healthy city, healthy housing: seniors living independently together

The “healthy city” has a duty to provide healthy housing for the elderly, but long-term senior care facilities are often institutional and cold. Healthy housing for seniors encourages wellbeing, provides a sense of community, addresses social isolation, and supports independent living.

Our elderly deserve a sense of independence but the current generation find themselves more isolated. Fifty-one per cent over 75 years old live alone, and almost 30 per cent spend every day alone with little outside contact. This sensitive balance of freedom and security, of being autonomous and part of, is vital in maintaining dignity for seniors. We can promote environments that sustain and support this balance.

The Greenhouse Model for senior long-term residential care began as a vision of Dr Bill Thomas and has become a national standard of excellence for caring for the elderly. It centres on quality of life, care, social outlet, and respect for ageing. It provides a sense of both independent living and family, without being institutional.

The original model was a single entity housing unit with a small staff-to-resident ratio of about 10 residents to a home with two caregivers and strict architectural guidelines. The ratio of people to structure provided a far better quality of life than large-scale nursing homes. The prototype has helped reinvent the definition of the nursing “home” and is making a significant impact for the betterment of senior living.

By “clustering” the concept, the benefits multiply. When adjacencies and proximities become a priority, micro-communities are created. Locating a single home in proximity to another has had a long-standing precedence of activating edges and encouraging spontaneous exchanges. Elements strategically and sensitively planned, such as front entrances with covered porches, leisure patios and terraces, are enhanced and enjoyed when several homes are built in unison, providing a sense of belonging.

Using the Greenhouse Model and the concept of clustering, this paper will demonstrate how the qualities of community, spontaneity and freedom are vital for senior health and physical wellbeing, and need not be sacrificed during the ageing process.

From care needs to health skills

Carinisse, a disadvantaged neighbourhood in Rotterdam, has traditionally been the 'reception hall' of the city. This neighbourhood is dealing with several challenges including low incomes, high percentages of psychosocial problems and rental houses, unhealthy lifestyles, and a self-reported feeling of a lack of safety.

Our vision aims to empower the inhabitants to work together on a liveable and social neighbourhood. The theory is based on the holistic concept of 'positive health' by Machteld Huber, who identifies six aspects to a healthy life. By balancing these aspects, we positively contribute to the health skills of the inhabitants, making them more self-reliant and resilient. We can subsequently offer them tools to improve their neighbourhood bottom-up.

It's important to make the access to care visible and accessible (curation). Our vision for the public space acts directly on three of the aspects Huber identified: participating, daily functioning, and bodily processes. These are addressed by shaping the public space in a way so that people meet each other, are stimulated to move and exercise more, and by creating easy access to healthcare providers. The three remaining aspects will indirectly be affected. When people participate more, function better in daily life, and use their bodily processes better, it has a positive influence on their mental wellbeing, and the meaning and quality of life.

The design interventions act on existing opportunities in the neighbourhood – for instance, by creating a 'green carpet' using the central axis spreading through the district, allowing all kinds of (health) facilities to branch off. In this way, facilities are made visible and accessible.

The strongest point of the concept is simplicity. It's an integral vision and has a big social impact. At the centre are the needs and wishes of inhabitants. Special attention is given to prevention, which will have a long-term effect, improving the neighbourhood constantly. The largest challenge will be the financial framework: who will finance it?

The next step is to develop the plan with a neighbourhood focus group to fully respond to their needs.



AnneMarie Eijkelenboom
(Netherlands)

Architect, research and development team,
EGM architects



Gail Ramster (UK)

Senior research associate,
Helen Hamlyn Centre for Design
(HHCD), Royal College of Art,

Tackling childhood obesity: a case study of hyperlocal inclusive design with the Stockwell Housing Estate in London

In the UK, nearly a third of all children under 15 years old are currently obese, with rates increasing. London is one of the UK's most at-risk areas, with the highest rates of childhood obesity seen in its most deprived areas and certain minority ethnic groups disproportionately affected.



Carmel Keren (UK)

Research associate, HHCD,
Royal College of Art

Tackling childhood obesity is a major challenge in housing estate communities, where many of the poorest Londoners reside. This research focuses on a residential community on the Stockwell Estate, London. The project uses an inclusive design approach, specifically 'designing with communities' in order to develop innovative and meaningful interventions to address this alarming health crisis. While other active research projects exploring childhood obesity are approaching the challenge from a clinical, street or school level, this hyperlocal project focuses on the city environment of a housing estate locality.



Dr Jak Spencer (UK)

Research fellow, HHCD,
Royal College of Art

In the first phase, key stakeholders were identified from local organisations, such as the local authority, health practitioners, youth services and businesses, as well as the community. Several different design research activities were developed with these stakeholders in order to understand the context, challenges and needs of the people, while also nurturing relationships to build trust and an understanding of each group's motivations, priorities and objectives.

Through mapping the factors that play a role in childhood obesity and insights from the stakeholder groups, as well as the different potential audiences involved (babies, pre-schoolers, primary or secondary-age children, pregnant women and parents), the research team produced a design brief grounded in insights from real people. From this, several ideas have been developed through co-creation and ideation processes with residents and stakeholders, using an iterative process of prototyping, testing and refining.

This paper will report on the results from the stakeholder research and co-creation stages, as well as reflect on the methodology and engagement strategies. The nine-month design research project will continue until February 2019, as the first part of a longer-term strategy for tackling childhood obesity nationally – and even internationally – within deprived inner-city neighbourhoods.

Keynote: Democratising capital: the choice to invest in healthy communities

This keynote address will explore how capital can be democratised, giving community investors the choice to invest in health.

Specialising in structuring and marketing investment offers to the public for organisations and projects that want to help bring about a better future, Abundance has a track record in providing long- and short-term debt in the renewable and energy sector, including for construction and development capital.

With more than 4000 investors, it's now expanding into other infrastructure and delivery services, such as housing, transport, education, communications, utilities – as well as healthcare – which will play an important role in delivering a more sustainable future.

Abundance structures its investments as debentures, which are debt-based securities that offer returns to investors from the tangible development of projects. Investment opportunities are available for every stage of a project's life. Options have been created to refinance construction finance into long-term debentures, providing full lifecycle finance and bringing investment from the public into projects at competitive rates.

It has funded three construction raises since 2015, providing investors with opportunities to diversify their existing Abundance portfolios with riskier and higher-return projects, as well as put their money to work in building new infrastructure in order to bring about a greener and healthier future.

Public engagement is recognised as key, both to achieving a successful finance raise and to ensuring broader social objectives are met. Abundance focuses on creating local engagement through bespoke communications to enable the key benefits for the local community to be promoted, helping ensure a smooth and inclusive approach to achieving a successful project.



Louise Wilson (UK)

Co-founder and joint managing director,
Abundance Investment



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Preparedness and infrastructure for disaster and emergency situations: the key to a resilient city

Natural disasters are increasing due to global warming, population explosion and overcrowding of cities. In the first few days after such disasters strike, invariably thousands of people are harmed and made homeless, infrastructure is damaged or paralysed, and roads are blocked for extended periods. If few external supports arrive, cities must harness locally available resources and community support. Cities must therefore be prepared for disaster situations to support citizens, and enhance their ability to recover and return to normal everyday life as soon as possible.

Purpose: This paper aims to present design concepts for urban preparedness by developing smart solutions for infrastructure merged into city surroundings. The concepts could be activated when disaster strike for the immediate welfare of city residents, with focus on the needs of certain populations.

Methods: Information on natural disasters was collected from scientific literature, professional reports, websites, videos, movies, and personal stories. Design concepts – developed in three studios and a workshop carried out in Italy and Israel, involving multidisciplinary teams of graduate students (industrial design, engineering and architecture) – will be presented.

Results: The main challenges following disaster include: protection; rescue; identification of survivors; supply of water, food and first aid; communication; information; and treatment. Design concepts that will be presented include:

- infrastructure of shelter facilities under ground, integrated with the urban space as part of a community centre and public park;
- storage facilities placed under ground to be activated and erected automatically upon need by specific sensors, containing necessities for the first days after disaster;
- communication aids and information centres to be activated automatically on disaster onset;
- infrastructure for rescue from fire, especially from skyscrapers and remote locations, using smart innovative technologies; and
- inflatable and temporary healthcare facilities.

Conclusion: Greater preparedness of city infrastructure will increase levels of community resilience, improve trust among citizens, and enable people to cope with potential traumatic events, thus building a physically and mentally healthy city.

From surviving to thriving: 'Home for All Seasons' – a model for resilient, healthy housing

With climate change increasing both the frequency and severity of flood events, more communities worldwide are having to cope with catastrophic damage to the built environment and a lengthy, traumatic recovery process. During this time, the quality of placemaking is often severely degraded and the experiences of those affected can have long-lasting psychological impacts.

This paper will explore a mix of strategies for adaptation and resilience in relation to existing and new-build contexts. The primary case study is the 'Home for All Seasons', an approach based on resilience rather than resistance (eg, let the water in rather than keep it out), and designed to address not only flooding but also overheating, extreme cold, energy independence, and changes in societal needs. The benefits of the '10 key principles' embedded in the 'Home for All Seasons' are explored in relation to creating healthy, resilient housing.

The 10 principles are incorporated in an overarching 'placemaking' approach to maximise the benefits to residents and the wider public realm. The principles are:

1. habitable zones are positioned at first-floor level and above to ensure a high-flood datum design;
2. the ground-floor 'garden room' zone is a flood-resilient, multi-use space that can be quickly adapted and cleaned post flood;
3. the 'causeway' at first floor provides safe access and egress in a flood event, and reduces demand on emergency services;
4. water and power utilities are elevated to first-floor level to enable continuity of services in a flood event;
5. the buildings' minimal hardstanding 'footprint' provides space for the integration of sustainable drainage systems or swales, and avoids displacing water to surrounding developments;
6. house design is suited to a compact plot with reduced back-to-back distances;
7. the building form encourages passive stack ventilation;
8. thick and continuous super-insulated envelope to incorporate passivhaus principles;
9. roof orientations support on-site energy generation; and
10. the core house plan can be adapted to suit changing needs.



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Technology's role in building urban resilience

The resilience and health of our cities are being challenged by climate change and rapid urbanisation. At the same time, technology is delivering change faster than most people thought possible. The result is that people and leaders are looking to technology as a way to overcome these challenges – to make our cities more efficient and resilient to shocks.

Elaine Trimble, from Siemens' Centre of Competence for Cities, believes there is a very real role for using technology to build resilience, and that smart cities should focus not only on efficiencies but also on improving our quality of life. She believes that technology has a role to play in building both technical and systems resilience, and that data can help us better understand causality across our cities.

In this talk, Elaine will delve into one smart city application that can give city leaders the real-time information they need to make better decisions about air quality, not only for today but also for five years from now.

Using theory from evolutionary biology to ground urban-scale intervention development: case studies from Zambia and Tanzania

How can we think profitably about cities in order to improve how they work? Are they places, groups of people, collections of buildings, networks of streets, or systems of a kind? Urban design lacks a consensual approach that has proven to be effective.

Methods: Taking cities as a kind of human superorganism provides a theoretical foundation for establishing the range of functions that cities must perform to flourish. Such functions include: reproduction; having a boundary and internal structure; providing internal system services, such as control and enforcement; dealing with material flows through ingestion, production, distribution, maintenance and excretion; and dealing with information flows through perception, memory, communication and external signalling.

Cities perform these functions via organisations in public, private and civil society sectors. How well a city protects its geo-ecological niche determines its overall fitness, but function-specific 'health' can be measured in several ways: 'metabolic' – the ability to engage in activity via flows of energy, material, information and power; 'physiological' – static measures of strength; and 'vigour' – the ability to cope with 'bodily' insults. Using these metrics allows a researcher to perform more specific diagnoses of problem areas.

Results: These principles have been tested in two recent sanitation projects at different scales: one in a peri-urban community in Zambia; the other a national-scale programme in Tanzania. In both cases, functional analysis indicated several foci where improvements could be made to the functioning of aspects of sanitation systems by different organisations. Interventions were designed using creative agencies to address these functional deficiencies, leading to improved sanitation service provision.

Conclusion: The human superorganism perspective has proven to be both theoretically and empirically productive in real-world case studies from a public health practice. Having a solid theoretical foundation in evolutionary biology adds rigour and strength to the concept of a 'healthy city', and allows predictive as well as comparative studies to be undertaken.



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The urban institution and the public space agenda: lessons in equity, inclusion and resilience from Toronto's Kensington Market

This presentation aims to define the socio-spatial conditions of the urban village and their capacity to foster resilience, equity and inclusion; and consider how these conditions may inform the renewal of urban institutions that serve high-risk communities.

Description: Two Toronto case studies will be used to support this discussion: Kensington Market, an illustrious urban community known for its retail landscape, and eclectic cultural and social patina; and George Street, a derelict residential neighbourhood known for heavy crime, drug abuse and homelessness. Albeit of similar origins, these two neighbourhoods are products of distinct socio-spatial trajectories. Kensington Market's evolution into a dynamic urban village has helped: address vulnerabilities such as isolation and accessibility; mitigate risk factors such as stress and stigma; and overcome the negative effects of gentrification through social enterprise and sustained purpose. This is, in many ways, the antithesis of George Street, whose siloed, high-stress environments engender division and discrimination.

Outcomes: With the transformation of the Centre of Addiction and Mental Health into a vibrant, 27-acre, mixed-use village fully integrated with its neighbourhood, Toronto is witnessing a growing appetite to redefine traditional institutional typologies with renewed emphasis on the transformative qualities of social space. While design plays a crucial role in creating the socio-spatial conditions that engender positive public health outcomes, commitment and long-term vision on the part of sponsors, government agencies and communities are key. Success is linked to cultivating strong grassroots voices, implementing rigorous client-led education and outreach programmes, introducing new public policies, and supporting important change management processes.

Implications: George Street is currently undergoing major redevelopment. It's envisioned to be a centre of excellence re-integrated into its local urban fabric and supporting a dynamic range of housing options, social programmes and wellness services for the whole community. This presentation will conclude with an overview of the levels of involvement required to successfully invest in the public space agenda, and the positive, sustainable implications this investment has on our overburdened care systems and the ecology of our cities.



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Paths to health equality – a Glasgow city case study: connecting communities through the activation of residual space

There is a rapidly growing evidence base detailing the multiple benefits provided by walkable neighbourhoods and access to quality green space.

This presentation focuses on Hamiltonhill Claypits, a live project in Glasgow where the activation of a former clay pit beside the city's canal has the potential to break down barriers between neighbourhoods, connect two sides of the proverbial tracks, and positively impact the health and wellbeing of deprived communities. Led by Scottish Canals, this project is highly participatory, with involvement and support from hundreds of local residents, artists, Glasgow City Council, the NHS, Partick Thistle FC, and others. The transformative potential of this site is massive, while the financial investment required is relatively modest.

Hamiltonhill Claypits delivers new walking routes connecting residential communities to healthcare facilities, transport links, and the cultural assets of Glasgow. It includes new entrances and a pedestrian bridge over the canal. Across this bridge, a brand-new NHS health and social care hub is under construction. Co-design and wide-ranging, sustained engagement are critical to success, so budget allocation should reflect this. The site itself is a registered local nature reserve; walking the hillside path is good cardiovascular exercise, as well as providing contact with nature and views across the city.

By delivering simple infrastructure – accessible paths, signage, and welcoming entrances – connectivity is created and acts as a catalyst. Local residents begin to commute, jog and dog-walk through the space, events are organised, and fundraising for facilities may follow. Paths encourage people to feel safe and use these spaces as their own. The keys to success are real community engagement, strategic thinking and intelligent design.

We're piloting an observation and questionnaire-based tool to measure the impacts of our projects, and to better understand their significance for individuals and communities. We hope this case study encourages delegates to think of their city's residual spaces as potent resources in the fight against health inequality.



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Processes and practices for performing city resilience in a healthy city

Despite significant interest in city resilience and the development of corresponding resilience strategies there has been no substantial study of the usefulness of artistic and cultural practice to understandings and practices of resilience.

We offer initial findings from the first case study of Performing City Resilience, a collaborative project investigating how cultural production (especially live performance) contributes to and reconfigures ideas and practices of city 'resilience'.

Rodin (2015) argues that we should not want to make ourselves, communities, businesses and cities forever fixed, but instead capable of absorbing disruptions and converting them into change that contributes to the system's overall functioning and purpose. In that context, what role can the arts play in embedding adaptability and capacity to absorb disruption in ways that are not 'simply' about infrastructure, and what we might think of as hard science engagement with a place and its people?

The arts, we argue, have a fundamental role to play in local resilience practices and, potentially, global resilience thinking. This is because arts practices think differently and so might illuminate alternate answers to those set out in extant resilience thinking.

Our paper takes, as its starting point, New Orleans chief resilience officer Ryan Mast's assertion that resilience needs to remain a fluid, somewhat undefined idea if it's to be a productive intellectual and practical force. Drawing on field research in his city, we respond to the need identified by Arts Council New Orleans and attendees at a public workshop for a shared lexicon of arts and resilience that facilitates meaningful conversations between arts professionals and city stakeholders. This would reveal the contribution the arts can make to the ways cities 'think themselves through' and contribute to more nuanced understandings of resilience in a global context.

This paper discusses the key terms in this emerging lexicon: listening, gathering and challenging. These arise from observations and interviews, and analysis of two recent performances: 'New Water Music' (New Orleans Airlift) and 'Cry You One' (Mondo Bizarro).

Putting the ‘social’ back into regeneration: social regeneration and urban renewal in inner London

The London Borough of Southwark has developed a major new strategic policy framework and cross-council programme on social regeneration. The approach aims to ensure that the places where people live, now and in the future, create new opportunities, promote wellbeing and reduce inequalities so people have better lives, in stronger communities, and achieve their potential.

The key objectives of social regeneration in Southwark are to ensure:

- a borough-wide approach to improving the wellbeing of current and future generations;
- a one-council approach to ensure all our assets are used and aligned effectively to bring about improved wellbeing for people and places across Southwark; and
- wellbeing as a primary outcome of all our work.

The council has made clear its commitment to ensure that regeneration works for everyone and that all regeneration taking place in the borough (from major developments to revitalisation of high streets) should seek to reduce economic and health inequalities, strengthen communities, and improve wellbeing. This approach aims to harness current and future changes in the borough to create local communities where people are healthy, resilient and connected, with opportunities for all.

This presentation will review the major components of this innovative approach to urban regeneration in inner London, reviewing the process, challenges and lessons learnt in political, technical and community engagement, governance, strategic planning, partnership working, monitoring, and evaluation. We will also reflect on some of the major accomplishments in the first year of the programme and highlight plans for scaling up this approach in the medium term.

In summary, we present a whole-council approach to ensuring that the wellbeing of existing communities and future generations are at the centre of our urban renewal efforts, creating new partnerships, governance, leadership, and community engagement to ensure its sustainability and impact.



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This is how to design for isolation and loneliness in our communities

Social isolation can be as damaging to our health as smoking 15 cigarettes a day, and being lonely can increase our chances of mortality by 26 per cent. With 9 million people reportedly suffering from loneliness in the UK – an increase of 200,000 people since the 1950s – this epidemic is impacting our community cohesion. Economically, the impacts are equally significant with three out of four GPs reporting that between one and five patients a day visit because they are lonely, and estimates place the burden of loneliness on private-sector employers at over £2 billion a year.

This paper aims to set out the main built environment causes of loneliness and isolation – such as density, safety, finance, accessibility, mobility, and urban scale – and to provide an overview of best-practice solutions developed from a global research programme.

In order to clarify the issues and identify solutions, we undertook primary and secondary research during the course of 2017–2018. Primary research included a quantitative survey of 1000 Londoners addressing issues of trust and social cohesion; qualitative semi-structured interviews of community development managers active on large regeneration sites in London; and a global survey of our own employees to establish a database of best practice solutions from leading cities. Secondary sources used to develop a literature review included academic articles, industry and third-sector sources, and media articles. The research sought to establish:

- a clear definition of what we mean by social isolation and loneliness;
- who are at most risk of being affected by isolation and loneliness;
- why people suffer from isolation and loneliness; and
- the impacts of isolation and loneliness?

The result is a comprehensive overview of the terms and their components, the development of a framework of drivers for why people are isolated and/or lonely, a synthesis of the literature around the impacts of isolation and loneliness, and case study solutions showing how cities are addressing these concerns across the globe.

Designing user-centred, supportive work environments and wellness programmes informed by structured measurement and psychology

This presentation will share our experience of working with two large organisations.

Drawing on Theory-U, a transformational change framework (Scharmer, 2009), we apply deep-listening principles to understand the needs of our clients and to see the situation from the stakeholder's point of view. The assumption that job elements can be classified into demands and resources – as stated in the job demands-resources model (Bakker and Demerouti, 2007) – acted as a guiding principle when designing our interventions.

Practical application: For both case studies we designed a bespoke methodology (questionnaires, focus groups, interviews) allowing us to: affirm key wellbeing challenges; make informed recommendations and measure return on investment; and understand change readiness for a 'well' way of working. We then support clients to design wellness programmes, including: a wellbeing toolkit, toolkit talks, and training; wellbeing champion networks; and bespoke working-well cards.

Outcomes: Learnings include:

- Shifting from an expert 'tell' view to a user-centred 'tell-us' view has enabled us to tailor our approach to the team's readiness, implementing a change programme that gradually expands in scope as the team bought into the value of wellbeing.
- Considering elements within our client team's sphere of control helped us develop working-well cards, and identify actions that enable a culture of wellbeing.
- Creating a network of wellbeing champions has been another strength – particularly successful when equipping champions with skills to spot changes in mental health and respond accordingly.

Implications: The case studies reveal the benefit of applying user-centred principles to design supportive environments and wellness programmes. What is more important than truly understanding your team's needs when working to enhance wellbeing through cultural interventions targeting personal experience?

The case studies also showed the importance of measuring wellbeing in a scientific way. This is vital to quantify the impact of our clients' investments and support us in continuing to spread the word about the need to design supportive work environments.



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HermanMiller

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Future trends in urban mobility, public realm and working practices, and their influence on health and wellbeing in workplace design

Our collaborative research project 'the Psychology of space', with the universities of Bath and Leeds, considers how we define the success factors of increasingly flexible environments, and to what extent personality type and personal preference influence our perception of the work environment.

Workplace is also affected by the public realm and transport links. 'Work' now extends beyond the office with increasingly mobile workstyles, variety of working environments, and the emergence of the 'productive commute'. In the near future, we'll be more readily able to choose where and how we work, based on our specific tasks, activities or personal preferences.

Smart travel apps, multi-modal journeys, and the emergence of connected and automated vehicles (CAVs) could provide more diverse travel choices, with increased options for working at transportation hubs between – or even, on – journeys.

The benefits of increased connectivity, flexibility for working, and diverse commute options could provide workers with more control and ownership, and the ability to shape their working patterns around their personal life. This relies, however, on providing choices that reflect workers' activities and requirements, and the autonomy to embrace these choices. These developments also have the potential to cause unintended negative consequences.

Will automation of travel and flexible working erode the boundary between work and personal life even further? Will over-dependence on remote or agile working lead to a decline in face-to-face interaction, or the opportunity for serendipitous encounters in the workplace, vital for psychological wellbeing? Or could the extensive use of CAVs and 'productive commutes' lead to a drop in health?

As the future of the workplace is driven by flexibility and openness, and the term 'workplace' expands to include local amenities, shared or public workspace, the public realm, and even transportation, a more holistic approach to design is required.

Our presentation will consider how trends in flexibility, technology and personalisation are influencing working practices, transportation, and the public realm, and the possible positive and negative implications of these on health and wellbeing.



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Sensing of the sensors: designing to engage occupants in the workplace environment

As we move to more knowledge-based services, attracting the best talents, health, and being collaborative and creative are the top priorities of many progressive companies (Ambrose, 2016). There is, however, very little published information incorporating wellness into the entire design-construct-operate process.

According to the World Green Building Council, labour cost represents 90 per cent of the overall organisational expenditure, while energy and building operational cost accounts for only 10 per cent. For businesses, even a 1-per-cent increase in productivity can have significant economic benefits. This paper explores how occupants influence building performance and which environmental features affect health and wellbeing.

The findings of this in-use data were then used to form a design brief for the renovation fit-out project of our London office. We engaged our staff to test if an interactive furniture system, IRYS, was able to engage a healthier work life through 'Internet of Things' devices. This research aimed to understand how subjective (self-assessed) satisfaction (personal gain), comfort (environmental gain) and productivity (organisational gain) are related to objective factors such as environmental conditions, and staff retention and absenteeism. The 120 participants took part in a pre- and post-occupancy survey.

Also, separate interviews with the organisation's directors were undertaken to understand their vision, which often doesn't align with the needs and desires of staff. Environmental sensors were installed in five zones, which represented various environmental conditions and office layouts. Outdoor and indoor conditions, such as temperature, air to carbon dioxide concentration, lighting, acoustic quality, and occupancy level, were displayed on IRYS in the central atrium. It contained recommended activities based on daily weather conditions, for example, 'We realised that you had a big breakfast and it's sunny today – why not go for a 30-minute jog and burn 300 calories?' or 'Aim for 6000 steps throughout the day'.

Data were collected through individual handheld devices to create a feedback loop. This presentation will explain how this engagement process and system can be improved and applied in other organisations.

Wellness matters – making the complex simpler. How the British Council for Offices is pulling down the barriers to health and wellbeing

Our physical health and mental wellbeing are affected by our genes, our social and economic circumstances, the quality of our relationships, and the value and purpose of our work.

Increasing awareness of the ability of our offices to influence our wellness has the potential to be disruptive to the entire office value chain. Emerging occupant demands, new performance standards, and third-party health and wellbeing ratings are beginning to reshape notions of value in the commercial property sector.

The British Council for Offices' 'Wellness Matters Roadmap' has been written to equip businesses with cost-effective and practical tools that help all stakeholders make better informed investment decisions on health and wellbeing. It also includes a rigorous independent review of the research and evidence presented on health and wellbeing to date.

Specifically, the roadmap:

- enables decision-makers to maximise the impact of health and wellbeing investment based on a review of the strength of medical and behavioural research;
- helps stakeholders make informed choices about third-party rating tools, or incorporate high-impact elements of these standards into their buildings without seeking formal certification;
- explains how to set focused, achievable and evidence-led goals that can be applied to every office building, of all ages, in any location; and
- sets out how to incorporate wellness considerations across the building lifecycle.

Projects applying the roadmap are already finding an easier path to certification against health and wellbeing and sustainability rating standards. Where they're not pursuing certification, they're more confident that their projects have taken a holistic approach to health and wellbeing.



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Comparing health-focused rating systems: WELL versus Fitwel

Given we spend approximately 90 per cent of our time indoors, the built environment has a profound impact on the quality of our health.

Recognising this, two international health-focused rating systems – WELL and Fitwel – emerged in 2016 to translate peer-reviewed, academic medical research into useful, actionable strategies for designers, contractors, tenants and building managers to use to promote healthy outcomes across the built environment. Both standards represent a spectrum of health implementation across an ecosystem of health and sustainability-focused rating systems, appropriate for use on various project typologies so that all can incorporate evidenced-based approaches, regardless of size, location and budget.

They're also designed to work in tandem with internationally accepted, mainstream sustainability systems, such as LEED and BREEAM, overlapping in a way so as to simultaneously promote health and sustainability together.

This paper will identify the drivers for health across the built environment, as well as understand how they impact health. The paper will discuss the rating systems' timeline, terminology, teaming requirements, budgeting, and cost for implementation. It will ask: who are the early adopters of these systems, and how do they differ and overlap with sustainability systems? The paper will also look at their innovations and applicability, so that participants can explore how they might be incorporated into both their research and practice.

Linking together research, practice and theory in a way that fosters interdisciplinary promotion and understanding of key tenets, the paper will provide timely tools to impact positively on health.

Beyond workplace health: how businesses can impact community health and contribute to healthier cities for all

Non-communicable diseases (NCDs) account for 70 per cent of deaths globally (40 million people annually). Addressing the risk factors of tobacco use, poor diet, and physical inactivity can curb the NCD epidemic. Too often, the focus is on convincing individuals to simply change unhealthy behaviours. This approach fails to recognise the immense influence that the environment has on people's daily choices and ability to easily choose the healthier option. Businesses, particularly those in the food industry, can play a vital role in addressing the NCD epidemic, as they shape people's behaviours, buying practices and environments. This session features representatives from a local community, public health non-profit, and the private sector.

Practical application: CHES (Community Health Engagement Survey Solutions) is an innovative process that promotes community-centred prevention by engaging communities in a data-driven investigation about health and the built environment. The Healthy Communities project (2016–17), delivered by a major confectionery business, looked at two communities: one in Halifax, England (Ovenden) and one in Girvan, Scotland (Glendoune). Using CHES, the project focused on environmental barriers to healthy eating and physical activity opportunities.

Outcomes: The project in Ovenden engaged 4000 people (one-third of Ovenden's population), with outcomes including increased physical activity levels and knowledge about health challenges, as well as improvement in their own health status. In Glendoune, community members assessed 40 local assets, and by the end of the project, 1000 people were engaged (one-third of Glendoune's population). One of the most significant outcomes was keeping the deteriorating community centre open. Community members also reported increased participation in sporting activities, positive changes in health status, and increased understanding of health challenges and of ways to improve health locally.

Implications: This session will make the case for how and why businesses should implement projects beyond workplace health that positively impact community health, and will share the process and outcomes from the Healthy Communities project using the CHES strategy.



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Great Western Studios

Great Western Studios (GWS) opened in 1994 to provide affordable workspace for the creative industries. After the organisation's original home received a compulsory purchase order for Crossrail, we assisted in finding a nearby derelict building, hidden under the Westway, and formed a brief to rejuvenate the existing structure to rehouse the GWS studios, cafe, project and exhibitions spaces.

It was essential that we provided users:

- affordable workspace;
- a safe working environment;
- a conducive environment offering flexible, hardwearing and naturally light spaces; and
- a central communal area and associated facilities.

Phase 1, designed in 2007 and constructed in 2008–2009, was a remodel and two-storey extension of the existing warehouse building. Phase 2, designed in 2014 and constructed in 2015–2017, comprised two additional storeys, built while the existing studios remained occupied.

The building comprises more than 100 studios. Each workspace has access to the communal atrium space, garden and courtyard. An important part of the design was to ensure that the existing inward-looking site connected with the surrounding area. The design responds by opening up the canal facade with large glazed areas, allowing in light.

Phase 2 resulted in the building 'rising out of the shadows' of the Westway, giving views to the south. The steel-framed building has been laid out around a series of communal spaces, the most influential of which is the internal light well. This atrium also creates a place to gather, interact and display exhibitions. The elevational treatment plays on the existing building's 'hidden quality', with refurbished brickwork to the lower floors, the use of a dark render and dark ribbed terracotta to the upper storey, and corten cladding around the entrance/cafe.

The existing shell was refurbished and the steel frame inserted to allow the building to be remodelled and extended. Cross-fertilisation of ideas and practices from studio to studio has helped reinforce a strong sense of community. This approach not only has social and cultural benefits to the users and local community but it has also enriched the lives, health and wellbeing, and businesses of the users in the building.

Workshop: Fundamental human needs and workplace wellness

This interactive workshop will explore new discoveries about human dynamics and work – all grounded in research and experiences.

Our fundamental human needs – purpose, belonging, achievement, autonomy, status and security – will be discussed and defined. What are their levels of priority? What are their implications for management methods, technology and tools, and places?

Looking beyond perceptions of generational diversity at work, how do we meet our fundamental needs through a combination of culture, technology and workplace design, and identify the barriers preventing the enhancement of wellness at work?



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Keynote: The role of cities in improving population health: international insights

Cities are playing a growing role in population health improvement and have enormous potential to be health-generating places. However, they also face considerable challenges and need to be governed in a way that gives all citizens the opportunity to enjoy good health.

Purpose: Drawing on international case studies, our research aimed to explore the role of city governments and their partners in improving population health, and the conditions for success.

Methods: The study was based on 50 in-depth qualitative interviews with leaders from 14 cities, including an extended case study on London examining the lessons that the city might learn from elsewhere. It also drew on a literature review of relevant research evidence and an expert roundtable held in London in early 2018. Our approach included a 'deep dive' on four major public health issues, selected to represent a range of challenges that may require different responses from city governments: obesity, HIV, air quality, and public mental health.

Results: Our research found that although there is wide variation between cities in governance arrangements, powers and resources, there are also several common themes. We identified five key roles for city governments in improving population health, including co-ordinating relevant activities across the city system, creating an environment that promotes innovation, and ensuring that planning processes are used effectively to create healthy places. We also identified five enabling conditions relating to governance arrangements, regulatory powers, leadership, expertise, and connectivity between cities. Effective political leadership is often a critical enabler of success, with international examples illustrating that significant improvements in population health are possible when city leaders are willing to invest their own political capital to advocate for change.

Implications: In England, debate about the role of cities is closely connected with the devolution agenda, with new 'metropolitan mayors' now covering one-fifth of the country's population. Policymakers should explore the case for giving cities further fiscal and regulatory freedoms to enable them to tackle population health challenges more effectively.

Keynote: Sitopia – shaping healthy cities through food

The question of how to feed ourselves is really a question of how we should live.

From Sir Thomas More's fantasy world, Utopia, to Ebenezer Howard's Garden City, many visions in human history of how we should live have food at their heart. Having coined the term 'Sitopia', meaning 'food place', Carolyn Steel explores how we can use food as a medium to work towards making better places.

Food is something that flows through our lives all the time. It comes from the land or the sea, goes through a distribution centre, and is sold at a market or supermarket. Whether already cooked, or ready for us to cook, the food is then consumed or wasted. Eventually, it ends up back in the land and the system is 'complete'.

Each element of this circuit both affects and is impacted by every other element, through habits, thoughts, beliefs and preferences – what might be described as food culture. If we value food differently and behave differently, that flow will change and the effects of it will change.

This keynote states that a good food system is imperative for a good life and a good society. Our most important relationships are, on the one hand, with one another, and on the other, with nature. Food can bring these two things together and help us shape our cities to support these relationships.



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Participatory system dynamics and health impact modelling for green infrastructure in London

Great challenges such as climate change, sustainability, wellbeing, and health inequalities require integrated approaches and systems thinking. In London, policy is starting to recognise this, as evidenced in the London Plan, the Greater London Authority's vision for the city's future development.

These plans need appropriate analytical methods to succeed – methods that foster holistic thinking while engaging the community as well as policymakers. They need modelling approaches that integrate the physical infrastructure as well as the decision-making and behavioural mechanisms surrounding our physical environment, and those that enable reliable analysis of future scenarios.

In this paper, we'll report on our preliminary engagement with the Greater London Authority (GLA) on the question of planning for green infrastructure, using participatory system dynamics as our methodological approach. We put special emphasis on the interactions between green infrastructure and health, in line with one of the city's top priorities. We focus on the mix of green infrastructure and how different types of green infrastructure provide benefits for the population.

Participatory modelling of the system during an initial workshop revealed the importance of distinguishing among at least three different types of green infrastructure: public green space, private gardens, and an 'other' category (comprising trees and other plants providing cover on streets, green access routes such as cycle pathways and walkways, green walls and roofs, etc).

Different types have fundamentally distinct characteristics that influence the nature and magnitude of impacts on health, some in unexpected ways. For instance, while private gardens add to the total area of green space, promoting them may counteract the expansion of public green spaces because they tend to increase real estate values, making it more expensive to expand public green spaces, and because areas with a higher density of private gardens may have less public support for public green spaces. The ability to capture both the dynamic nature of this complexity, as well as the potential unintended consequences, is a key facet of systems thinking, and system dynamics in particular.

On behalf of the CUSSH (Complex Urban Systems for Sustainability and Health) Consortium

Examining the effectiveness and economic impact of a Controlled Environment Agriculture (CEA) facility in London: a one-year prospective study

Controlled Environment Agriculture (CEA) is a method of indoor food production involving the control of multiple variables. It can be beneficial in and around densely populated areas, owing to its proximity to end-consumers and the perceived benefits, efficiencies and advantages it can offer compared with traditional methods of farming. Indoor agriculture, more broadly, has been around for decades, but only in recent years has there been significant activity in developed countries, including the United States and United Kingdom.

Approach: There are two key research questions: (1) how effective is CEA in inner-city areas compared with its alternatives?; and (2) what level of economic impact and contribution does CEA have in the surrounding area? To answer these questions, cost and production data from an existing CEA site will be analysed, together with publicly available population-level data, and randomly administered questionnaires created by the study team. Data will be analysed using a mix of econometric and statistical methods.

Outcomes: Outcomes measured throughout the study will include: economic impact; social impact; customer profiles (wealth, nutrition, employment status); cost of land and business rent; farm output; product price comparison; food miles; waste; energy consumption/output; and environmental impact. Outcomes will be grouped under the two research questions and the study team will consider cross-overs between the two – alongside a set of conclusions and recommendations.

Implications: The number of published studies focusing on CEA is small and disproportionate to the amount of inner-city projects, commercial installations and research facilities being formed in developed and developing markets. If CEA and, more broadly, vertical farming is to become a viable substitute or complementary approach to traditional farming, helping to cope with additional demand from population growth, more information is required. This study seeks to add value to the body of research in this area, using a small yet high-growth, community-facing CEA facility in London as a focal point.



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Using green infrastructure to improve urban air quality (GI4AQ)

More than 90 per cent of the world's population is exposed to air pollution that exceeds World Health Organisation guidelines for healthy living. Air pollution (mainly nitrogen dioxide and fine particulate matter (PM2.5)) is now the leading environmental cause of mortality worldwide – about 3 million premature deaths a year, twice the number killed in road traffic accidents.

Authorities worldwide have, with few exceptions, struggled to provide adequate air quality (AQ) improvements through emission control strategies alone. With rapid urbanisation and increasing traffic emissions, policymakers are increasingly turning to complementary methods of reducing human exposure to air pollutants in urban areas.

One method for air pollution mitigation is the use of green infrastructure (eg, street and park trees, green walls, green roofs, and other means of introducing vegetation into the urban landscape), on the basis that airborne pollutants deposit more efficiently on to vegetation than on to smoother, impervious, artificial surfaces. However, the empirical evidence for the effectiveness of green infrastructure (GI) for delivering air quality improvements is weak and, in some circumstances, installation can exacerbate the problem.

Ground-level concentrations of urban air pollutants are a complex function of emissions, dispersion (stirring and mixing), deposition and chemistry. Much of this complexity is linked to the spatial pattern of the urban “canopy”, within which people are exposed to polluted air. Given the complexities of how urban form impacts the atmospheric concentrations of pollutants, it will remain difficult for researchers and practitioners to determine how and where GI can improve air quality. We've critically appraised the evidence for the effectiveness of green infrastructure in a conceptual framework and offer six specific policy interventions for introducing GI that can only benefit AQ (GI4AQ).

We identify situations under which GI is unhelpful or even detrimental to AQ, and acknowledge, also, that inserting or removing green infrastructure with the intention of improving air quality must be considered in the context of other possible co-benefits and costs of air pollution mitigation.

Which spatial characteristics of urban green spaces are beneficial for mental health?

In recent years, the evidence for a beneficial effect of exposure to, and use of, urban green spaces (uGS) to a population's mental health is being established. uGS are thought to be beneficial to mental health by promoting social and physical activity, reducing exposure to air and noise pollution, and reducing stress and restoring attention. What remains unclear are which specific characteristics of urban green spaces are beneficial.

Methods: This review takes two approaches in systematically, qualitatively synthesising characteristics of green spaces beneficial to mental health. First, epidemiological papers about this relationship are used to distil those characteristics associated with better mental health. Second, cases are identified in which uGS have been evidenced as playing a beneficial role in protecting against mentally distressing exposures, or promoting mentally beneficial exposures.

Results: Across 38 studies, effect sizes are highly variable – ranging from 3.1 increased odds of major depression in the least compared with the most green areas on one hand, and zero effect or actively stressful on the other. Globally, there appear few generalisable associations between mental health outcomes and specific spatial uGS characteristics (eg, Euclidean distance to nearest park, size of nearest park, density of surrounding greenery, qualities of uGS). More consistently, the review showed that areas without any uGS are worse off.

Those of lower socioeconomic status may be poised to benefit the most, but further analysis within the same urban location is indicated. Finally, there is good evidence that different characteristics of uGS are associated with variably facilitating mentally beneficial social and physical activities, variably exposing citizens to reductions in air and noise pollution, and are variably associated with degrees of stress reduction and attention restoration.

Conclusions: Broadly, some versus no green space in an urban environment is likely to be beneficial to common mental health outcomes at a population level. Work towards designing uGS interventions for mental health benefit should be targeted at culturally and geographically specific determinants of mental health.



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Can affordable and sustainable housing be the keystone to social mobility?

In the past year, three fires have ravaged the township of Imizamo Yethu (IY) in Hout Bay, South Africa, resulting in loss of life and the displacement of hundreds of people.

This paper focuses on the fire as the catalyst for change. It examines life in the township before and immediately after the fire, in addition to the future.

Practical application: Hout Bay is a suburb of Cape Town, home to wealthy white people, the informal settlement of Imizamo Yethu, and the coloured township of Hangberg.

A charity has been working to engage local partners on key themes:

- education to employment – effective after-school clubs that link to improved opportunities;
- housing – ongoing development of new, innovative housing to be built on 'neutral' ground;
- health – a new clinic to provide an opportunity for better social cohesion; and
- listening project – the charity has hosted a listening project with local school children and young adults to understand what they want their future homes to look like.

Outcomes: Architectural and planning advice has been provided for the new health clinic and proposed extension to Little Angels crèche, and the development of the 'Bay Walk' masterplanning proposal to unify isolated communities. Sustainable and affordable housing solutions are being developed based on: land tenure; long-term affordability; links to local health and education services; self-buildability and self-maintenance; learning and sharing of construction skills; and improving employment opportunities.

Implications: Events surrounding the fire provide a foundation to propose fresh ideas to address the area's housing crisis – notably the change from an informal dwelling to a solidly built house with running water and electricity. But many residents feel they have no voice in how their local communities are run, and no ownership with regard to the land or dwelling. There is also a lack of connection to local services such as healthcare, education and employment, and a lack of pedestrianisation and public realm. The charity therefore intends to look at wider social issues and challenge conventional thinking on traditional township housing.

“I don’t like nature”: defining nature for healthy, inclusive urban green spaces

Having access to parks and green space in the city has been linked to reductions in chronic stress, improved health, and longer life expectancy overall, irrespective of our individual characteristics.

Advocates of the biophilia hypothesis assert that this is because all people have an instinctive need and love for nature. The idea of ‘nature’ in research supporting biophilic arguments is, however, extremely broad, leaving mainly Anglo European landscape designers to fill in the gaps with their own understanding. This case study research investigates how culturally dominant understandings of nature are inscribed in park space, and how these differ from the preferences and values of the ethnically diverse communities that many UK parks now serve.

There is generally less quality green space in deprived areas than in wealthier areas in the UK. Ensuring equitable access to city parks in areas of deprivation can, arguably, be an important part of overcoming health inequality. People from black and minority ethnic backgrounds in the UK often suffer the greatest health inequality and, at the same time, are significantly under-represented as users of city parks and urban green spaces, at levels greater than can be accounted for by income inequality alone. We will provide evidence that cultural values and beliefs about nature impact on park use, and argue that while seeking inclusion, park designers and managers may be unintentionally excluding people of black and minority ethnicities from our city parks, and from potential health and wellbeing benefits as a result. The findings draw on mixed-methods case study research, including survey, interviews, focus groups, spatial analysis, and user observation, with communities in East London in 2014 and 2018, and in Croydon in 2017.

The authors make recommendations for more culturally aware and nuanced understandings of “nature”, and advocate for inclusive practices in the creation and management of urban landscapes.



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Integrating social equity into practice

This talk seeks to instruct delegates on how to integrate social equity into their work with the application of a social equity toolkit. The toolkit, originally established by the City of Seattle Race and Social Justice Initiative, was formed to advance access to opportunities for historically underserved and underrepresented communities – particularly communities of colour, and immigrant and refugee communities. This kit has since been adapted into a tool for design teams, and has broad applications across all areas of practice, at all scales for projects, programmes and initiatives.

Framework: The session will consider:

- What is the definition of social equity in the context of the USA?
- Why is this work leading with race?
- Why is this relevant to our respective practice areas?
- What are the institutional inequities that prevent access to opportunities?
- How was the toolkit adapted for private practice?

Discussion will move on to the components of the toolkit – a framework organised around the following: setting equity-based outcomes; involving stakeholders and analysing data; determining the benefit and/or burden; advancing opportunity and/or minimising harm; evaluating, raising racial awareness, and creating accountability; and, finally, reporting.

Implications: The speakers will use an example of an urban planning-based initiative, and work through the first step of the toolkit, setting equity-based outcomes. They will then develop a series of equity-based outcomes to advance opportunities for underserved and under-resourced communities. Wrapping up, they will share the outcomes drafted, and engage participants in a final discussion over which stakeholders they feel need to be included in the next steps in the toolkit process.

Outcomes: Delegates gain understanding of inequities that exist, and why we lead with race in the context of the United States. They will also develop their understanding of the social equity toolkit process, and learn how to set equity-based outcomes that shape the remaining steps in the process, and how those outcomes relate to achieving “success” for a project.

Infrastructure investment as a trigger for social inclusion and placemaking

This paper considers the restoration of the Cotswold Canals through the Stroud Valleys, the increase in direct use of the towpath and canal itself, and the impact on the quality of development and instigation of neighbourhood plans. It draws on evidence collected for the Heritage Lottery Fund (HLF) bid for the next stage of the canal, and on proposals in the Stroud Town Centre Neighbourhood Development Plan (NDP).

The canal: The Cotswold Canals originally connected the Rivers Severn and Thames, but last century fell into dereliction and in places disappeared. Restoration of the first phase around Stroud has recently been completed. In April 2018, the HLF awarded development money for the next phase, which will connect the first section to the rest of England's navigable waterways. The restored towpath is now heavily used for recreation and commuting by foot and bike. The canal is used by canoeists, paddle boarders, a disabled boating charity, and the Canal Trust's trip boats. Both the canal and towpath have opened up opportunities for physical activity and social engagement. Future plans will promote wildlife conservation and research the impact on health and wellbeing.

The town: Canal restoration has transformed the perception of investors, politicians and the community. Derelict industrial areas have been rejuvenated, making blue space the focus of high-quality housing, commercial and greenspace development, including a new civic square. The relationship between town centre and canal remains problematic, leading directly to the instigation of the Stroud NDP, which was prepared by volunteers with wide community engagement and eventual 93-per-cent approval. The process was instrumental in negotiating improvements to new frontage development and pedestrian connectivity. The NDP proposes opening up the canal to the town, towpath widening for disabled access, new pedestrian and cycling access, and pedestrian safety and convenience in the heart of the town.

Conclusion: Canal investment can act as the trigger for progressive changes in perception and behaviour of civil society, public bodies, investors, and the community at large – with expected long-term benefits to health and wellbeing.



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Everyday green infrastructure in an age of austerity: making the case for green space and wellbeing

This paper presents research from Improving Wellbeing through Urban Nature (IWUN), a three-year project led by the Department of Landscape at the University of Sheffield. It finds that despite recognition of the benefits of the urban natural environment in supporting mental wellbeing, spending decisions are predicated on an “austerity urbanism” (Peck, 2012), which demands cash savings as the rationale for investment.

IWUN was funded by the Natural Environment Research Council to explore links between urban green spaces and wellbeing. It seeks to understand the types of spaces that contribute to wellbeing, the ways in which people with mental health issues appreciate natural spaces, and how public decision-making can enhance wellbeing.

Part of this research focuses on how decisions about the urban natural environment are made. Through interviews and workshops, participants from diverse groups selected interventions designed to maximise wellbeing. They discussed how their preferred actions contributed to wellbeing, where such work had proven successful, and why decision-makers might support such investments.

The actions selected overwhelmingly focused on low-profile, everyday work required to maintain and enhance good quality green spaces. Preferred actions included:

- toilets and cafes in parks to encourage use, and maximise inclusion and a sense of safety;
- support for voluntary and community organisations working in green spaces, and for activities to animate those spaces and provide volunteering opportunities; and
- ‘green corridor’ walking and cycling routes, connecting parks and open spaces with local neighbourhoods or workplaces.

Practitioners also highlighted the difficulty of making any case for investment in such ‘everyday infrastructure’. One consequence has been growing demand for evidence that demonstrates direct causal connections between investment in green spaces and reduced costs to health or social care services.

The paper argues that the climate of austerity promotes a fallacious understanding of wellbeing to the detriment of investment in green spaces. Research and practice insights suggest that ecologically diverse and well-maintained natural spaces provide an essential context for wellbeing. Everyday urban nature should thus be a foundation of healthy placemaking, not an optional extra.

Keynote: Improving health through the circular economy

Under a circular economy, the value of products and materials is maintained for as long as possible. Waste and resource use are mitigated – a product is not thrown away when it reaches the end of its life but is instead reused to create further value.

The circular economy is a means to sustainable consumption and production, which feature in the UN's Sustainable Development Goals (SDGs), specifically SDG 12. The principles of the circular economy can be hugely beneficial for society, by encouraging innovation, growth and the creation of jobs.

While less well understood, the potential benefits for human health are also significant and can contribute to achieving sustainable development. There is, however, also the risk of adverse health effects if this shift fails to consider health implications and health equity issues.

This keynote address will explore how health can be improved through the circular economy.



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The future of cities, health and the street

Over the past year, two major thought experiments have been brought to life in Australia that re-imagine what the street of the future will look like. A collaboration between the Australian Smart Cities Council, the Internet of Things Alliance, Place, and the Australian Institute of Landscape Architects, and funded by the Australian Government, 'Future Street' was built in 2017, in Sydney's Circular Quay, and sought to bring to life the concepts, principles and latest technology predicted for streets of the future.

Purpose: Future Street aimed to encourage debate about the street of the future – from smart technology, data-driven design, and autonomous vehicles, to biophilic and complete street design.

'Green the Street', constructed in August this year, at the Royal Queensland Show in Brisbane, built on and challenged this knowledge by not only showcasing a street of the future but also by questioning the role of who really creates the street. By embracing more than 30 different organisations, including universities, the arts, and urban farm collectives in the design and construction, the street became a truly collaborative and community-led project, advocating for greener, healthier and more inclusive streets. 'Green the Street' evolved into a real-world organisation, which greens Brisbane's streets through events and advocacy.

Methods: The design considered three viewpoints: the street needed to remove the car to be greener (the green street); we needed to consider multimodal activated streets with commerce and agriculture (the complete street); and we needed to understand what a 'smart street' looks like. The installation began with a 'today street' – acres of asphalt, lots of paving and cars – which embeds pollution alongside obesity, long commutes and isolation. This served as a counterpoint to the three future streets. Along each street, 100 tonnes of soil, 30 mature trees, and thousands of plants were placed to create an urban parkland. The complete street included an urban agricultural hub, and multimodal transport, commerce and electric bicycles. The smart street was filled with smart technology, including electronic vehicles, data sensors, digital play, and smart furniture.

Results and conclusions: With rapid urbanisation, streets are required to perform multiple functions and are increasingly moving away from a heavy-pollutant, purely transit orientation. In the near future, many city streets will need to be redesigned. This offers opportunities for: human-centred design and social spaces; green infrastructure; health-enhancing green space; commerce; and urban agriculture. Our future streets should not only be health-enhancing but also social, green, smart and connected.

Designing public places in social inequality contexts: lessons from the Baobab Garden at Recife, Brazil

The Capibaribe Park Project is a new waterfront park created alongside 15km of the Capibaribe River in the city of Recife, northeast Brazil. The river is a social divide: to the left are middle-class neighbourhoods; to the right, lower-income communities.

The project aims to bridge these margins and articulate a system of public places, connecting existing squares and parks through active mobility infrastructure nested in an ecological corridor. The challenge was to conceive a democratic space, honouring nature, and fostering local cultural values of informality and social friction.

This paper presents the methodology of emergent urbanism developed at the Capibaribe Park Project, co-ordinated jointly by a university transdisciplinary research with local government and the active collaboration of inhabitants. The inception phase established guiding concepts for a river park project aiming to reconnect citizens with existing nature and the water. The second phase describes the participatory design experience for prototyping the Baobab Garden, the park's first module. The third phase, activation, involved use of the place by different users.

Marked by an exuberant presence of trees at the river bank, the Baobab Garden features corners for picnics, a big communal table with benches, twinned seesaws, benches under trees, and a floating deck in the river. However, conflicts arose when youths from peripheral areas made the place their daily meeting point, prompting the garden's middle-class users to seek their eviction.

This paper aims to discuss the emergence of strangeness among users, as well as the roots of social prejudices and the role of nature in calming such distress. It also describes the experience of restorative practices as a series of dialogues developed with the conflicting groups. Solutions were found through the groups' shared and common feelings, including nature admiration and the esteem for the place.

The paper concludes by discussing the lessons learned in how to design public places that embrace diverse identities and cultural values, as well as the practices that can help cities become more equitable, sustainable, resilient and happy.



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Healthy high streets – good placemaking in an urban setting

This study was commissioned by Public Health England (PHE) to synthesise the latest evidence on health and wellbeing benefits of high streets, through inclusive, safer and healthier design – particularly in areas of high deprivation. The aim is to highlight the health impacts of poor-quality high streets and present evidence for interventions that can improve them to influence health outcomes.

The review provides a rapid assessment of evidence relating to pedestrian-friendly, healthy high streets, with reference to design interventions and street furniture. The review illustrates how a greater understanding of how place and people interact could help realise the potential of our high streets, and contribute to the health and economic gains of our local communities.

Methodology: The most recent evidence on aspects of the high street shown to be health-promoting, and which impact positively on physical and mental health, were searched and synthesised. The research focused on three features: good quality street design, street furniture, and provision of communal spaces – to explore how they can positively impact on social cohesion, and mental and physical health.

Results: The report defines a 'healthy high street' as: one that incorporates aspects of the built environment and its uses that have been shown to be health-promoting, impact positively on physical or mental health outcomes of local populations, and promote easy, inclusive access to a wide range of users. High street space needs to be viewed as an existing community asset that has the potential to build and improve social networks, activate community activity, and promote healthy activity.

Conclusions: High streets can become cluttered and difficult to navigate, leading to the exclusion of some groups and increasing risks to pedestrian safety. Traffic, noise and air pollution have direct, negative impacts on health. The rise of out-of-town shopping centres, internet shopping, and car ownership has drawn people away from some high streets. All these issues hinder successful placemaking, have direct and indirect impacts on health, and are unevenly distributed. The unequal distribution of poor-quality built environments contributes to health inequalities in England.

Using active design principles to create healthier communities: theory and practice

This presentation will explain how active design principles were incorporated into masterplan development projects, provide examples of their implementation, and outline the benefits they can bring.

Framework: Health and wellbeing benefits associated with different urban design interventions are becoming increasingly commonplace in new developments. However, historically, there has been a lack of a co-ordinated approach to defining the most impactful interventions. Sport England developed the 'Ten Principles of Active Design' by drawing from urban design practice and practical examples, which promote environments that offer individuals and communities the greatest potential to lead active and healthy lifestyles. Their practical implementation brings together developers, planners, designers, transport consultants, and health professionals.

Practical application: The principles were applied as part of a sustainability strategy on the redevelopment of a large housing estate in southeast London. Many of the principles are not new to experienced design teams, but their application, in a coherent framework with tangible results, is less common.

The principles are: activity for all; walkable communities; connected walking and cycle routes; co-location of community facilities; multifunctional, open spaces; high-quality streets and spaces; appropriate infrastructure; active buildings; management, maintenance, monitoring and evaluation; and activity promotion and local champions.

Outcomes: Applying the principles on a live project provided a solid test case for how they work in practice. The design team was very receptive to the ideas, and the use of a framework for their implementation stimulated significant buy-in from the developer. Use of such principles by a housing association allows them to design-in features that will benefit its residents. Use of the principles also allowed for the development of a narrative that helped support the scheme through the planning process.

Implications: As health and wellbeing moves up the agenda for local authorities and developers, there's a need for frameworks that support implementation. Sport England's active design principles provide an industry-supported framework to maximise benefits to the health of the population.



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Guidelines and methods for building child-responsive cities and communities

Throughout the world, there is little reference material and a lack of adequate guidelines for private developers, municipalities, urban planners and real estate to refer to when planning, designing and building new developments aimed at improving lives for children.

Practical application: Two publications, *Shaping Urbanisation for Children: A Handbook On Child-Responsive Urban Planning*, and *A Framework for Building Child-Friendly Cities*, present evidence-based recommendations, tools and technical strategies to bring children to the foreground of urban planning.

Shaping Urbanisation for Children builds the case to invest in urban planning and answers three key questions:

- Why does planning cities for children matter?
- What should be planned for children, based on UNICEF's '10 Children's Rights and Urban Planning Principles for Cities'?
- How should you plan for children?

The *Framework for Building Child-Friendly Cities* includes an extensive analysis of peer-reviewed public health research on how to create practical guidelines and policy recommendations for planning, designing and developing social housing projects that prioritise children, their rights, health and happiness globally.

Outcomes: The framework suggests 90 recommendations for children aged 0-3, pregnant women, and their caregivers on the following: general child health; healthcare access; physical activity; nutrition; mental health; social interaction; environmental health; child protection; safety and injury prevention; participation and citizenship; education; legal frameworks; and policies. The handbook includes a checklist of children's rights and urban planning principles.

Conclusions: The framework can be adapted for specific communities and regions based on conducting a simple health risk assessment that evaluates the leading causes of death, disease and disability in children aged 0-3, caregivers and pregnant women, and tailoring recommendations to address those concerns first. This can then be applied to create a broadly applicable set of guidelines for any regional context. Together with thorough monitoring and evaluation, these tools can coalesce to form an articulate, child-friendly social housing, neighbourhoods and communities framework with which to engage governments, developers, community stakeholders, and children throughout the world.

Designing for urban childhoods

Child-friendly urban planning is an emerging field. It advocates a coherent and systematic approach to planning and designing cities that improves children's development, health and access to opportunities, moving beyond simply providing playgrounds. It recognises the importance not just of independence and play but also of the built environment in helping shape a child's development and prospects, and hence their adult lives.

Key determinants in the health, behaviour and development of children are the environments in which they live. Everyday activities, such as walking, cycling and play, can support a physically active population. In contrast, high-density traffic, poor air quality, and a lack of public space can directly discourage people from being physically active. Furthermore, the dominance of cars is still considered one of the biggest barriers to child-friendliness.

Methodology: We researched and analysed a wide-ranging and international body of work, including a literature review, sought expert knowledge among many disciplines through workshops and interviews, and conducted our own surveys of children. The report draws on built environment expertise and was produced in collaboration with global experts on childhood.

Results: The amount of time children spend playing outdoors, their ability to get around independently, and their level of contact with nature are strong indicators of how a city is performing, and not just for children but for all city dwellers. Health and wellbeing, the local economy, communities, sustainability, and resilience all stand to benefit from this approach.

Conclusions: The report sets out actions for improving existing and new urban environments. Major change is possible through small, co-ordinated interventions, scaled-up and adapted to different contexts. Insights and impacts from successful child-friendly interventions should be explored, shared and incentivised.

The benefits of a child-friendly city go beyond children and extend to all citizens. A child-friendly approach has the potential to unite a range of progressive agendas and act as a catalyst for urban innovation. Highlighting children's needs helps solve other urban challenges, leading to cities that are better for everyone.



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Child-friendly urban planning: lessons from cities in Canada and Europe

What is child-friendly urban planning? What measures have leading cities in Europe and Canada taken to improve their streets, parks and public spaces for children and young people? What can decision-makers and advocates learn from these cities about how to build their case and improve their urban environments – not just for children but for people of all ages?

In tackling these questions, the author will share insights from his 2017–18 Churchill Fellowship travels, which took in Antwerp, Freiburg, Ghent, Oslo, Rotterdam, Vancouver and Calgary. In each city, the author interviewed key decision-makers in municipalities and partner agencies, gathered data and guidance material, visited sites and schemes, and, where possible, engaged directly with groups of children to hear what they had to say.

The author takes as his starting point the definition of child-friendliness first drawn up by Marketta Kytta (a professor at Aalto University in Helsinki), which formed the basis of the 2017 Arup publication *Cities Alive: Designing for Urban Childhoods*. This definition – encapsulated in the notion of children's everyday freedoms – places equal emphasis on what neighbourhoods offer to children and how easy it is for them to get around.

The author will set out the common tools and building blocks deployed by all the cities he visited, and highlight some of the differences between them. He will reveal the varied reasons why different cities have chosen to focus on children's experiences of urban environments. He will also pull out the lessons for city leaders, planners, public health agencies, and advocates around the world.

Anatomy of healthy spaces: insights and solutions

An emerging consciousness of the transition from treatment to prevention and wellbeing provides the public and private sectors opportunities to implement progressive, innovative ideas to underpin the evolution of healthy communities.

As well as creating key 'wellness' guidelines, it's imperative to establish supportive solutions for varied multigenerational length profiles within the fabric of the community.

This paper explores the journeys people make through their urban environments and concludes by reviewing a town centre shared space scheme in Chester designed by IBI.

Purpose: A radical approach is required to match diminishing resources with the varying demands of declining public health and rising morbidity, increasing life expectancy, and the expectations of those who regard health as a 'resource for everyday life'. Collaboration between the public and private sectors will be critical, as will evidence-based design solutions, responsive to locality and contextual issues.

Methods: To explore these relationships and communicate with a diverse audience, a graphic language capable of mapping the narrative of a 'day in the life' of various demographic segments, will prove helpful. Such a communication tool combines a transect across a hypothetical neighbourhood with overlays of imaginary journeys to show how places are experienced, revealing the impact of design, organisation and technology on health. In this way, the relationship between the physical, organisational and technological environment can be visualised, enabling the exploration of those approaches most appropriate for a community.

Conclusion: Designing and planning healthy new communities is a complex exercise involving nutritive, curative and sensory delight. It's essential to address all sensory receptors in respect of multiple and varied health profiles. Designers and masterplanners must address all sensory factors from the earliest stages of the design process. Innovative design tools, underpinned by robust evidence-based research, will help relieve pressure on healthcare systems and deliver healthy communities.



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Food hubs: the role of placemaking in creating healthy communities

One of our primary health challenges is ensuring a safe, affordable, nutritious and sustainable diet for the growing urban population. Nearly 2 billion people globally, including 42 million children under the age of five, are overweight or obese, while almost 795 million live in food deserts with no access to healthy food. Most residents in distressed areas of the US are experiencing economic hardship with difficulty paying for rent, mortgage or buying food. Diet-related diseases, such as diabetes and heart disease, are increasing significantly in the US.

The Robert Wood Johnson Foundation promotes the idea that placing wellbeing at the centre of every aspect of our lives and having the opportunity to make healthier choices are important in creating a 'culture of health' in our communities. Although recent policy changes at the local, regional and national levels promise improved health through some interventions in environment, we're still lagging with implementing extensive and sustained healthful environmental changes.

Food security ensures that nutritious, safe, affordable and culturally appropriate food is consistently available to all residents of a neighbourhood. Food security also promotes equity, inclusivity and flexibility within an ever-changing system, and is vitally important for promoting efficient and effective use of food resources. Indeed, creating food hubs can achieve positive health, socio-economic, cultural and environmental outcomes, as well as a sense of place – not simply a location to obtain food.

This study asks the question: can the design of a food environment, or food hub, also contribute to placemaking in disadvantaged communities and help create a culture of health?

After exploring the theoretical foundations for community placemaking and the tenets of successful food security efforts, this study will investigate several food-hub case studies. The overarching goal is to create a theoretical foundation and toolkit of metrics for evaluating future food-hub design.



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Heart Safe City programme: activating the community to save lives using smart digital technologies

Sudden cardiac arrest (SCA) is a fatal failure of the electrophysiological signal in the heart. It can happen to anyone at any age and is mostly unpredictable. Victims often die within minutes with no help. More than 7 million lives are lost every year to sudden cardiac arrest, with some victims as young as 18 years of age. Many of these lives could be saved if the urban population were better trained and had the correct infrastructure to help the victim while awaiting the emergency responders' arrival.

The Heart Safe City programme is designed to enable a rapid early intervention of a nearby trained responder.

Taking advantage of 'internet of things' infrastructure and cloud technology, the programme helps cities locate the victim, the nearest automated external defibrillator (AED) and, most importantly, the nearest trained community responder. With this technology infrastructure, local care can be mobilised within the first crucial six minutes while, in parallel, engaging the emergency medical services (EMS).

The Heart Safe City programme is a fully integrated solution that enables the trained public, EMS professionals and city authorities to work together to deliver a safer and healthier community, and respond in a timely way to SCA events.

This approach provides greater accountability, a higher success rate, and more control of city-wide programmes. Moreover, the community is better connected and motivated to help fellow neighbours or family members. A small-scale pilot in the Middle East is already showing an impact, with a plan to enrol 100,000 responders and install 10,000 AEDS across the city, fully integrated with the EMS. Once the pilot is complete, the programme will be expanded to other cities across the globe during 2019.

Conclusion: The programme illustrates the technical development and delivery capabilities to successfully implement citywide programmes for improving SCA survival rates. The Heart Safe City programme is an offering that can be readily scaled and should be a core building block of any connected healthy city endeavour.



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Shaping Communities by Design

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hdrinc.com



Delbrook Community Centre
North Vancouver, British Columbia, Canada



Focal Point Community Campus
Chicago, Illinois, USA

Project CityZen – designing health opportunities for Brazil’s cities

Project CityZen is a Newton Fund project that supports collaborative R&D between organisations in the UK and Brazil. The aim of Project CityZen is to design and deliver a demand-led and citizen-centric platform to enable public officials to improve planning and delivery of personalised services to citizens, particularly older and vulnerable citizens who have complex health conditions. The CityZen platform will also support healthcare providers to deliver personalised care outside of hospital.

In order to develop innovative technology, the research team is engaging directly with citizens, public officials, and healthcare professionals from Campinas City and the City of São Paulo, with participation from Associação Paulista de Municípios (which supports a network of 645 municipalities in the State of São Paulo) and clinicians from the City of Belo Horizonte. Albert Einstein Hospital in São Paulo is a project sponsor.

The research team is also engaging with experts from the UK, Singapore and other global markets so that the CityZen platform is well positioned for later scale-up.

The paper provides an overview of research methodology for end-user needs assessment, the development of user personas, and the articulation of use cases that have led to detailed functional specifications. Arising from this research, Project CityZen scientists have developed a novel approach to the creation of synthetic bots that represent population-based cohorts of interest. Using semantic web, AI and machine-learning capabilities, the research team is designing a technical approach to enable end users, such as city officials, make better and faster decisions to inform planning and service delivery.



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Designing healthy high-density urban environments – a toolkit for success

As cities face significant transformations with rapid urbanisation and population growth, climate-related, evidence-based design strategies that create healthy and inclusive urban environments are required to ensure long-term liveability, sustainability and resilience.

To address the above concerns, our study demonstrates how the urban micro-climate can be enhanced through a design process that is guided by comprehensive urban climate and health analysis. Designing city form with this focus will improve human health and promote social wellbeing.

Method: A multi-tiered method has been developed and tested, with different tiers associated with: environmental analysis in relation to urban form; translation of the results into health metrics; and definition of design strategies that prioritise health and social wellbeing. The process involves:

- data collection through a cloud-based computing system, assessing the existing conditions of two dense city areas in London, and mapping environmental parameters of irradiation, solar access, daylight availability, wind, and thermal comfort;
- translating the obtained environmental analysis data into health metrics, highlighting potential health risks associated with the study areas; and
- using the health metrics to inform and prioritise design and planning strategies that improve health and social wellbeing.

A pilot of the City of London has been undertaken to test the proposed method. The study asks how we can assess and translate climate data in our cities into relevant health-related metrics that lead to improved urban wellbeing and social cohesion.

Results: The multi-tiered analysis method provides a simultaneous assessment of existing and predicted urban conditions, which are translated into health metrics. With advanced computer modelling, we can predict how urban thermal climate may influence heat- or cold-related stress and mortality risks – an approach essential to future-proofing cities in the face of climate change.

Conclusions: The multi-tiered method will help designers and planners prioritise strategies to promote health and social wellbeing, especially in areas of high density. Our approach illustrates how this method can be applied to influence interventions in other cities around the world.

Lifespace mobility among community-dwelling older adults in Singapore

We aim to explore the mobility and activity of older adults aged 55 years and above in three of Singapore's urban subzones (Hong Kah North (HK), Toa Payoh West (TP), MacPherson (MP)), and to describe their interactions with the built environment. Preliminary findings from the first 13 participants are presented.

Methodology: The aim was to recruit up to 60 participants. Each individual was given a GPS tracker with an in-built radio frequency identification (RFID) tag and accelerometer. Participants were instructed to wear the tracker for seven days to monitor their daily outdoor mobility and places visited. A travel diary was issued to each participant to record their outdoor activities. Data collected were made compatible for analysis on a Geographic Information System (GIS) platform.

Mobility variables generated include: "activity space"; total outdoor walking distance; and total outdoor vehicular distance travelled. The total number of steps taken out of home and average walking speed were collected from the accelerometer, and time spent out of home obtained from the RFID tag. Nodes of interaction were identified from GPS co-ordinates, defined as places where a participant had remained for five minutes or more.

Results: HK residents spent the longest daily time out of home while MP residents the least. Similarly, HK residents had the largest activity space while MP residents the smallest. The total daily number of steps taken out of home and proportion of trips made on vehicles follow the same trend across subzones. Average walking speed was comparable across all subzones. In total, 11 major land uses from Singapore's Masterplan 2008 were identified for 299 interaction nodes across the country.

Conclusions: We present preliminary results from an ongoing study to understand travel and mobility patterns of older adults in Singapore. HK residents had the highest time spent out of home, activity space, and daily number of steps compared with the other two subzones. Future findings will be triangulated with participant wayfinding, and architect and urban-planner site audits. Data triangulated would then be used to redesign the three sites using design thinking.



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Travel, approach, enter! A three-step framework to analyse and co-create inclusive public space

Providing safe, affordable, accessible and sustainable mobility for cities is key to the new urban agenda set out in UN Habitat III and its Sustainable Development Goals (SDGs). It is consensus that the specific needs of people with disabilities should be considered at the starting point and as a central component in implementing SDGs. However, the field of urban design hasn't yet integrated theoretical approaches, such as access for all and universal design, into the core of their research activities and teaching curricula. This results in a lack of clarity of definitions and limited empirical data, as well as an educational gap for future planners and architects.

This paper presents a theoretical framework to analyse urban design parameters crucial to improve accessibility and usability for citizens with different motoric and cognitive skills. The framework is retrieved from a literature analysis on universal design, access for all, and walkability in urban planning. In a second step, the authors illustrate the framework with the case study of a busy public transport hub in the city of Darmstadt, Germany. The authors critically reflect on the model's performance, to guide analysis of an urban space's performance in providing key affordances, and critically assess its usage in a series of urban design classes.

As a result, this paper presents a three-step-framework as a typical sequence, in which pedestrians experience public space in cities in order to get to a given destination: travelling with public transport, car or bicycle to access a given area; approaching a destination in an area, by gaining orientation and following guiding elements; and entering a destination by interacting with spatial thresholds and other people. The theoretical framework and its elements are illustrated through a case study and report.

The framework will attract planners and policymakers interested in the design of inclusive public transport hubs and public spaces. The framework may be used in activities to raise awareness of problematic sites and neighbourhood design, including teaching universal design approaches in planning and architecture curricula.

The urban road network: a public health asset

Why is it that despite us living closer together and having more access to communication tools, we feel more disconnected? What more can our streets, squares, paths and pavements offer us to address loneliness, inactivity – even rickets?

Too often, our urban roads and how we use them are an afterthought in city planning, and are not considered as a public health asset.

This talk looks at the urban areas that an increasing number of us are calling home, and explores how planning, transport and a focus on public places can help improve our cities, as well as what principles can be extended into towns.



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Elevating humanity to optimise the mobility revolution

As people, we're shaped by various conditions and experiences. Consider 45-year-old Susan, who is struggling with the progression of multiple sclerosis. Decreased leg movement forced her to trade her racing bike for a cane and she can no longer keep up with her son at the park. How, she wonders, will she get around when she loses all function in her legs?

Think about 55-year-old Bernard, who is unemployed and trying to support his special needs daughter. All his money goes to her care. He can't afford to live closer to public transit or buy a car. How, he wonders, can he find a job he can get to easily?

Susan and Bernard understand they need to learn to adapt in order to survive and – hopefully – eventually thrive. Our cities, likewise, must plan for and respond to various forces to remain relevant. They must move beyond just adopting the latest technologies and focus on enabling the quality of life their citizens strive for – with mobility a key enabler.

Mobility represents freedom, control and access to other quality-of-life enablers, such as healthcare services, jobs and financial stability, and recreation. Without equitable mobility, the social/cultural/economic divides in our cities continue to deepen.

Facing unprecedented growth in the Denver metro area and the impending adoption of new mobility technologies, three primary transportation agencies joined forces to develop the Denver Mobility Blueprint – a mobility and transportation vision and a plan for realising that vision. The first step towards creating the vision was to understand how mobility currently impacts day-to-day life for residents. Ethnography was used to dive deep into motivations and behaviours, and increase understanding of how mobility links to quality of life, health and wellness. The research provided a strong foundation for building an equitable and resilient future state, as well as helping stakeholder agencies prioritise policy changes and investment over time.

This session shares how public and private entities are joining forces to support adoption of mobility technologies and influence public policy in order to create equitable solutions for Denver's residents, including Susan and Bernard.

Mobility and travel: designing accessible, affordable, clean and safe systems to travel

A healthy city is a place where street design, transport provision, and policy come together to create a metropolis that enables, encourages and normalises healthy lifestyles. It provides a healthier, happier place where the costs of healthcare are reduced by limiting the long-term health impacts of inactive lifestyles and poor air quality.

With a focus on school-age children, Mott MacDonald has been working with local transport departments and public health to design and implement new ways in which to encourage them to get to school on foot, or by cycling or scooter. These alternatives provide a cost-effective means of increasing mobility and are easily accessible to a wide cross-section of society. They're also able to limit congestion, reduce the dominance of the car in urban areas, improve health, and increase the quality of the urban realm.

Purpose: The purpose is to share insights from our findings to shape deliverable solutions for city design.

Conclusions: Through collaborative working, tangible design approaches can be developed that unlock benefits to cities and citizens now and in the future.



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Urban mobility policies, and extra-small and low-cost interventions for promoting quality of urban life of people with Autism Spectrum Disorder

The paper focuses on the rarely discussed topic of the relation between the city and people with Autism Spectrum Disorder (ASD). It aims to promote their individual “urban capabilities” by increasing the autonomy and safety of walking across the city at the neighbourhood scale, thus making access to relevant urban spaces and services possible.

Current research and applications aimed at exploring the role of spatial configuration as a means for improving the autonomy of people with ASD focus on the definition of criteria for the design of closed, private spaces ‘devoted’ only to people – mainly children – with ASD (eg, assisted living residences, day care centres and schools, healing gardens, etc). Very few researchers specifically investigate the relation between the city and people with ASD, focusing on their sensory experiences related to the interaction with the urban environment.

The increasing incidence of ASD, and the need to guarantee during adulthood the opportunity to exercise autonomy and independence, are the main reasons why it’s important also to investigate the contribution of urban mobility policies and urban design to the enhancement of the quality of life of people with ASD.

This paper describes ongoing research aimed at defining a set of integrated urban mobility policies, and extra-small, low-cost interventions for promoting and providing the opportunity for people with ASD of “using” their everyday city.

We first provide a framework for illustrating the recurring problems that people with ASD face in their daily life when they interact with the urban environment.

Supported by analysis of existing contributions (research and projects) and exchanges with different experts (neuropsychiatrists, teachers, parents), we then identify the urban requirements needed to help people with ASD walk autonomously and safely in the city.

Finally, we propose an operational translation of these requirements into an integrated system of urban mobility policies, and extra-small, low-cost and scalable projects at the neighbourhood scale. An application to a neighbourhood of the city of Sassari, Sardinia, will be presented.



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SALUS Global Knowledge Exchange

SALUS (Science, Architecture, Lifestyle, Urbanism, Sustainability) is a global media, publishing, research, events and training organisation with a vision to improve human and planetary health by design.

Our mission is to create, share and disseminate knowledge concerning the relationship between human health and the natural, built and social environment. We believe that the two great challenges of our age – the need to maintain and improve human health in the face of ageing populations and an epidemic of chronic disease, and addressing climate change through a more sustainable management of the earth's finite resources – are inextricably linked. Healthy people require a healthy planet.

As well as Healthy City Design, SALUS organises the European Healthcare Design (EHD) Congress in collaboration with Architects for Health. Held annually at the Royal College of Physicians, EHD is now in its fifth year and has established itself as one of the leading healthcare design events in the world. EHD 2019 takes place on 17-19 June 2019.

SALUS has also created an online knowledge-sharing environment dedicated to the design of healthy and sustainable communities at www.salus.global. This groundbreaking knowledge resource features videos of the talks, posters, and full papers from our conferences, a daily online journal, and a fully searchable map of healthy and sustainable built projects, alongside a variety of innovative community features. We invite you to join at www.salus.global to participate and contribute to the community and a global knowledge exchange.



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The Helen Hamlyn Centre for Design, Royal College of Art

The Helen Hamlyn Centre for Design in London is the Royal College of Art's largest and longest-running centre for design research. It's an international leader in people-centred and inclusive design – the process of designing products, services and systems for ease of use by the maximum number of people.

Founded in 1991 and endowed by the Helen Hamlyn Trust, our purpose is to conduct design research and projects with industry that will contribute to improving people's lives. Our interdisciplinary approach is based around a series of interlocking research activities related to design for ageing, health, work, mobility and cities. We have developed empathic and innovative research methods, working in partnership with a wide range of business, industry, government, academic and third-sector partners.

Our expertise in healthcare has extended from design policy and information to the development of systems, services and products. Our projects include a total redesign of the interior space of the emergency ambulance.



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Cities & Health

Cities & Health, a new Routledge academic journal, provides an innovative international platform for consolidating research and know-how for city development to support human health. The journal has an editorial board who are passionate about bridging the academic-practitioner gap and promoting city impact.

Committed to developing a shared evidence base, encouraging better cross-disciplinary understanding and supporting critical trans-disciplinary practices, the journal publishes papers and commentary from researchers and practitioners working to build a new wisdom for supporting healthier cities and communities.

Cities & Health explores the drivers of urban change through the lenses of health and health equity. The journal invites contributions from a broad range of disciplines, including but not limited to: urban design, planning, architecture, transport, landscape, and city governance.

The journal covers a wide range of topics but public health and health equity lie at the heart of the discourse.

RESEARCH • DESIGN connections

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Research Design Connections

Research Design Connections is an important research-based resource for practicing designers. It reports on findings from studies conducted by social and physical scientists that designers can apply in their work.

Subscribers are architects, interior designers, landscape architects, industrial designers, urban designers/planners, and others interested in how our experiences in the physical world influence how we think and behave.

Findings from trustworthy, unbiased sources are shared in everyday language. Insights derived from studies in recent peer-reviewed publications, etc, are integrated with classic, still relevant findings in concise, powerful articles. Topics covered range from the cognitive, emotional and physiological implications of sensory and other physical experiences, to the alignment of culture, personality and design, among others.

Knowledge and information are shared through a monthly subscription newsletter, an archive of thousands of previously published articles, and a free daily blog.

THE ACADEMY OF URBANISM

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Academy of Urbanism

The Academy of Urbanism is an active, not-for-profit, politically independent membership organisation founded to expand our collective understanding of placemaking and share best practice. We recognise, encourage and celebrate great places across the UK, Europe and beyond, and the people and organisations that create and sustain them.

We bring together the current and next generation of urban leaders, thinkers and practitioners. We embrace city management and policymaking, academic research and teaching, development planning and design, and community leadership and urban change-making.

We use the evidence we gather to promote better understanding of how development and management of the urban realm can provide a better quality of living for all. Creating places that promote health and resilience is at the heart of our mission.

The activities we undertake are formed under two groups: Learning from Place, and Place Partnering. Both generate learning outputs that we disseminate through digital or print channels.

Academicians, young urbanists and others active in making and shaping good places are central to our activities. We offer active participation and encourage our members to plan, take ownership and steer what we do.

bre

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BRE

BRE is an international, multidisciplinary, building science organisation with a mission to improve buildings and infrastructure through research and knowledge generation, and their application.

Our products, services, standards and qualifications are applied in more than 80 countries, enabling our customers to make a positive difference to the built environment.

BRE has also established an Innovation Park Network, featuring full-scale demonstration buildings, to inform sustainable development at a global level and stimulate innovation in the built environment. Parks are already in the UK and China, and further facilities are being developed in Brazil and Canada.

Our multidisciplinary teams include leading experts in virtually every element of the built environment. They operate internationally, with offices, representatives and partners around the globe, and at our head office and major facilities in the UK.

We're owned by a charity called the BRE Trust, which delivers one of the largest programmes of built environment education and research for the public good.



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C3 Collaborating for Health

C3 believes that preventing non-communicable diseases (NCDs) requires collaboration between all sections of society and a focus on the three risk factors: unhealthy eating and drinking; lack of physical activity; and tobacco use. This includes addressing both the individual and environmental barriers to leading a healthier life.

We're pleased to see increasing global recognition around prevention and risk factors, but our work has become more urgent as the NCD epidemic escalates and health systems buckle under enormous financial demands.

Our expert staff know that only through collaboration can society hope to overcome this public health crisis. Known for the breadth of our work and openness to engagement, we specialise in projects with businesses, communities, workplace health and health professionals.



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Centre for Urban Design and Mental Health

The Centre for Urban Design and Mental Health (UD/MH) is an international think tank focused on answering one question: how can we design better mental health into our cities?

Good population mental health is essential for a thriving, resilient, sustainable city. Yet planners and designers are only just starting to understand their huge potential opportunities for impact and value in designing for good mental health.

UD/MH launched in 2015 in response to the need for increasing global knowledge at the nexus of urban design and mental health. UD/MH brings together diverse evidence, promotes strategic research, catalyses conversations, and develops practical guidelines to inspire and empower policymakers, planners and designers to systematically integrate public mental health into their work.



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Construction Industry Council

The Construction Industry Council (CIC) is the representative forum for the professional bodies, research organisations and specialist business associations in the construction industry.

Established in 1988 with just five founder members, the CIC now occupies a key role in the UK construction industry, providing a single voice for professionals in all sectors of the built environment through its membership of 500,000 individual professionals and more than 25,000 firms of construction consultants.

The breadth and depth of its membership is such that the CIC is the only single body able to speak with authority on the diverse issues connected with construction without being constrained by the self-interest of any particular sector of the industry.



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Design Council

The Design Council champions great design: design that improves lives and makes things better, improving our built environment and tackling complex social issues.

As an enterprising charity, our work places design at the heart of creating value by stimulating innovation in business and public services. We inspire new design thinking, encourage public debate and inform government policy to improve everyday life and help meet tomorrow's challenges today.

In 2011, the Design Council merged with CABE, the UK Government's advisor on design in the built environment. Together, we're passionate about using design to improve people's lives and we believe that design-led innovation can stimulate business growth, transform public services and enhance places and cities.



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Design Quality Indicator

Design Quality Indicator (DQI) is a process that enables every aspect of design quality to be assessed at each stage of the construction process, from inception to post-occupancy evaluation.

DQI empowers stakeholders to participate and be actively involved, through structured workshops and online tools, with construction and design professionals, to set targets against which design quality can be reviewed. The workshops are professionally mediated by an accredited DQI facilitator.



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Housing Learning and Improvement Network

The Housing Learning and Improvement Network (LIN) is a sophisticated network bringing together housing, health and social care professionals in England and Wales to exemplify innovative housing solutions for an ageing population.

Recognised by government and the housing-with-care sector as a leading 'knowledge hub' on specialist housing, our online and regional networked activities aim to:

- connect people, ideas and resources to inform and improve the range of housing choices that enable older and disabled people to live independently;
- share market insight and intelligence on the latest funding, research, policy and innovative developments to spread practice faster; and
- engage with industry to raise the profile of specialist housing with developers, commissioners and providers, in order to plan, design and deliver aspirational housing for an ageing population.



London Sustainability Exchange

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London Sustainability Exchange

London Sustainability Exchange (LSx) is a “think and do” charity that creates collaborations that address the complex barriers to a sustainable London.

Our energy, community energy and resilience programmes engage with communities to empower healthy and sustainable lifestyles, enabling this to be a social norm.

Our Green Enterprise programme flips the waste paradigm: working with community groups to recast waste as a valuable resource and bring the reuse market closer to a “tipping point”.

Our Air Quality programme brings awareness of the power of community action for change across London. We support communities and schools to establish the hard facts about air quality in their area, and work through social networks to encourage shifts in travel behaviours.



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Mike Nightingale Fellowship

The Mike Nightingale Fellowship was established in 2012 and is a registered charity in the UK. The charity aims to change lives through sustainable development. Currently, it's active in South Africa, principally in Hout Bay, where it's leading or contributing to myriad projects.

The charity sees its role as one of enabling improvements, by providing resources and skills that bridge critical gaps. Applied judiciously in the right place and the right time, even small amounts of resources can help people with limited opportunities develop their own skills and capacities to improve their own lives, and those of their families and communities.

The charity supports change that meet the needs of the present without compromising the ability of future generations to meet their own needs.



tcpa

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Town and Country Planning Association

The TCPA campaigns for the reform of the UK planning system to make it more responsive to the needs and aspirations of all people. The independent charity, which was formed over a century ago by Ebenezer Howard, founder of the garden city movement, challenges legislation that intensifies social, environmental and health inequality.

As part of its Reuniting Health with Planning initiative, the TCPA is working to improve the knowledge of practitioners, planners and non-planners – especially those involved in national and local policymaking – to inspire better integration between the health and planning disciplines.

URBAN DESIGN GROUP

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Urban Design Group

The Urban Design Group (UDG) is an international membership charity devoted to improving life in cities, towns and villages through better design. The UDG believes that good urban design depends on successful collaboration between all those who shape the built environment, whatever their professional or personal background.

Founded in 1978, the Group aims to promote high standards of performance and inter-professional co-operation in planning, urban design and architecture, landscape design, and all other aspects of the built environment; and to educate relevant professions and the public in matters relating to urban design.

Over the years, we've seen a transformation in the quality of existing and new development. A great deal of development, however, is still badly designed. More than three-quarters of all planning applications in the UK are prepared by someone with no design training. Much development is designed or planned by people with little idea of how to work in an urban context. Our mission is to raise standards of education and awareness of urban design across societies both in the UK and internationally.

We work to support urban designers and foster an increased appreciation of the value of quality in the public realm through our events programme, newsletter and acclaimed journal *Urban Design*.



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WorkTech Academy

The WorkTech Academy aims to capture the inspiration and evidence emanating from its global faculty of speakers, experts and partners – and build knowledge and best practice across a worldwide community.

Established in September 2016, the Academy captures knowledge, ideas and insights from across the global WorkTech network.

With content curated across six streams – people, place, technology, culture, innovation, and architecture and design – the WorkTech Academy provides comprehensive coverage of the changing world of work.

By combining an interactive online platform with live events, the organisation offers access to best practice in the field, with opportunities for peer learning, study, networking, analysis and joint research.

The WorkTech Academy was co-founded by Jeremy Myerson, an academic researcher, author and activist in workplace design and innovation. Jeremy is also chair of design at the Helen Hamlyn Centre for Design, Royal College of Art, and the programme director of Healthy City Design International.





The knowledge community dedicated to designing a healthier society and a more sustainable planet

COMMUNITY

Create a profile; join discussion groups; post news; and build a global network.

EVENTS

Learn and post about seminars, conferences and exhibitions around the world.

JOURNAL

Read, watch and contribute articles, papers and videos on research, policy and practice.

MARKETPLACE

Find organisations, services and products helping to design a healthier society.

PROJECTS

Find and learn about healthy and sustainable built projects around the world.

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www.salus.global

Create Partnerships

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KNOWLEDGE SPACE

Create Partnerships

Create Partnerships brings together a portfolio of high-quality brands for the outdoor environment, all sharing the philosophy of delivering exemplary products alongside superior customer service.

Operating as autonomous self-determined businesses, all companies in the portfolio have as their common hub Paul Collings, who has been working in the external environment arena since 2000, when he set up Timberplay.

Dovetailing with this expertise, Create Partnerships' Playgarden brand presents a landscape-led approach to play design, suitable for the early-years setting.

Create Partnerships also includes All Urban, which presents leading street furniture and lighting brands, and Lightmain, which offers sport and skate solutions to suit a wide range of projects and budgets.

Stepless

by Guldmann

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KNOWLEDGE SPACE

Stepless

Stepless is a division of Guldmann – a Danish-based firm that develops and manufactures welfare technology for people with reduced capabilities, and work tools for those who care for them – and a specialist brand that focuses exclusively on accessibility solutions.

We supply a wide range of high-quality products designed to eliminate hindrances and difficulties caused by height differences, in order to make sure people with limited mobility have easy, dignified access to all kinds of buildings and means of transport.

It's often quite a challenge to improve access conditions, especially in old or historically protected buildings. We therefore manufacture unobtrusive and aesthetically pleasing solutions that provide good access without spoiling the visual appearance or architectural heritage of a building.

HDR

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KNOWLEDGE PARTNER

HDR

We believe the way we work can add meaning and value to the world. That ideas inspire positive change. That colouring outside the lines can illuminate fresh perspectives. And those small details yield important realisations. Above all, we believe that collaboration is the best way forward.

For more than a century, HDR has partnered with clients to shape communities and push the boundaries of what's possible. Our expertise spans nearly 10,000 employees in more than 225 locations around the world – and counting.

Our engineering, architecture, environmental and construction services bring an impressive breadth of knowledge to every project. Our optimistic approach to finding innovative solutions defined our past and drives our future.

**HermanMiller**

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KNOWLEDGE PARTNER

Herman Miller

Herman Miller is a global company with the following mission: to provide inspiring designs that help people do great things.

The company has succeeded for more than 100 years in using design innovation as a means of thinking, learning and solving problems. Its human-centred approach begins with the study of people, their physical attributes and their behaviours.

Based on this research, the company works with the industry's preeminent thought leaders around the world to design solutions for people, wherever they work, learn, heal and live.

Our award-winning furniture and related services and technologies are available through dealers, retailers and e-commerce websites around the world. Whatever the environment – be it office, school, home or hospital – we work hard to create a better world around you.



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SILVER PARTNER

HLM

The HLM Group works internationally as one, sharing best practice, knowledge and experience across the globe. The group comprises four independent architectural and interior design practices: HLM, Llewelyn Davies, Sidell Gibson and 33 Interiors.

The HLM brand combines design skills from four integrated elements of our business: HLM Architects, HLM Landscape & Urban Design, HLM Interiors and HLM Environment. We believe that successful urban communities are created through a placemaking approach with the community at the heart of the process. Our approach focuses on understanding the context, history, culture, patterns and forms of cities, towns and neighbourhoods. We're committed to delivering a sustainable built environment that aspires to achieve inclusive communities and economic viability for a healthier, safer future and a cohesive environment for all.



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SILVER PARTNER

Llewelyn Davies

The original partnership of Llewelyn-Davies Weeks was founded in 1960 by (Lord) Richard Llewelyn-Davies and John Weeks, both innovators in the design of flexible, highly serviced environments.

Llewelyn Davies has since pioneered new thinking in the planning and design of health and science buildings, delivering more than 250 health projects in 75 countries, by employing an adaptive, intelligent approach to create high-value solutions for complex building types.

Llewelyn Davies is also one of the UK's leading masterplanners. From Milton Keynes to the urban renaissance agenda of the 21st century, through policy guidelines and development strategies, the company has influenced the UK Government's vision for planning and design. The international export of this knowledge has led to commissions for Llewelyn Davies in six continents.



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 **KNOWLEDGE SPACE**

LID Publishing

LID Publishing specialises in working with business authors and organisations to help them develop content to promote their brand, message and expertise.

Founded in 1993, LID has more than 1700 authors and adds about 120 new titles each year, around one-third in English and the rest in Spanish and other languages. LID also publishes academic and professional journals, such as *Dialogue*, *Edge* and *Catalyst*.

LID books have been translated into more than a dozen languages and distributed worldwide. LID has nine offices in seven countries: United States, UK, China, Spain, Mexico, Colombia and Argentina.

It ranks number one in the world in business history, and business dictionaries and biographies, and is the leading publisher of business books in Spanish-speaking countries. LID is also a founding member of Business Publishers Roundtable.



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 **KNOWLEDGE SPACE**

StreetGym

StreetGym is Army veteran John Allison's urban micro-adventure, designed to promote an improvisational mindset, teamwork, as well as build resilience. It's about showing people how to use what they already have around them – so your street literally becomes your gym.

Increasingly, we're losing our situational and environmental awareness. Walk along any high street and you'll see people glued to their smartphones, oblivious to the world around them and the huge potential that lies beneath their feet. StreetGym also aims to address this negative impact of our technology-driven world.

During a typical one-hour StreetGym session you'll be running, jumping, balancing and crawling your way around the city. You'll see the city through a different lens and feel a deeper connection with the streets. Architectural features and street furniture become workstations, where you'll perform a variety of bodyweight-based exercises before jogging along to the next workstation.



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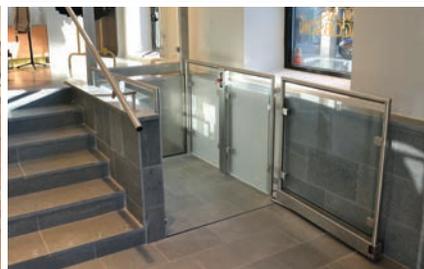
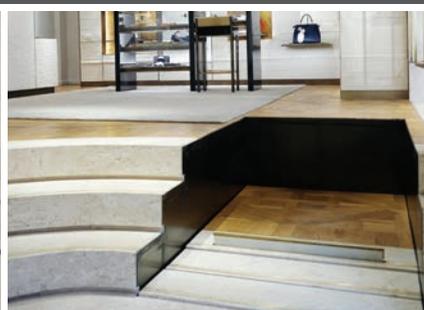
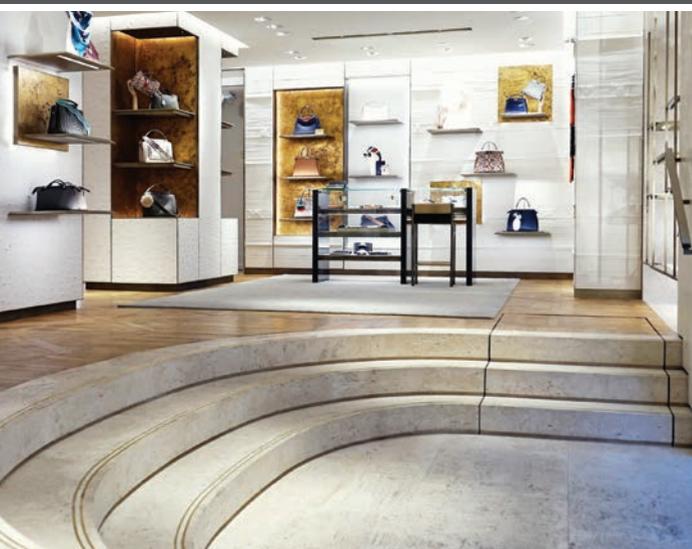
 **KNOWLEDGE PARTNER**

WSP

One of the world's leading professional services firms, WSP provides technical expertise and strategic advice for clients in: property and buildings; transportation and infrastructure; environment; industry; resources (including mining, and oil and gas); and power and energy. We also offer highly specialised services in project delivery and strategic consulting.

Our experts include engineers, advisors, technicians, scientists, architects, planners, surveyors and environmental specialists, as well as other design, programme and construction management professionals. With approximately 42,000 talented people in 500 offices across 40 countries, we're well positioned to deliver successful and sustainable projects, wherever our clients need us.

Access for all



Good access is essential for being able to go where you want, when you want.

Stepless supplies standard and bespoke products designed to provide users whose mobility is limited with smooth, dignified access to buildings and means of transport.



Heritage Buildings



Public Buildings



Private Homes

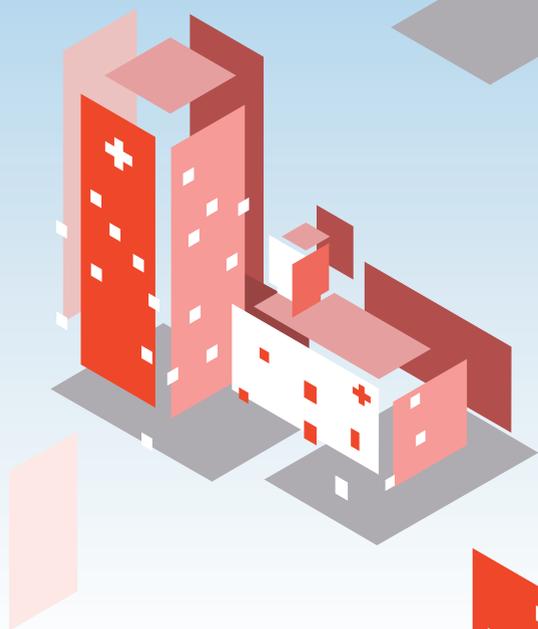


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