

Designing for Health & Wellbeing

Home, City, Society

Edited by

Matthew Jones

Birmingham City University

Louis Rice

University of the West of England

Fidel Meraz

University of the West of England

Series editor

Graham Cairns

AMPS

The Interdisciplinary Built Environment



VERNON PRESS

Copyright © 2019 by the authors.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior permission of Vernon Art and Science Inc.

www.vernonpress.com

In the Americas:
Vernon Press
1000 N West Street,
Suite 1200, Wilmington,
Delaware 19801
United States

In the rest of the world:
Vernon Press
C/Sancti Espiritu 17,
Malaga, 29006
Spain

The Interdisciplinary Built Environment

Library of Congress Control Number: 2019933411

ISBN: 978-1-62273-512-9

Product and company names mentioned in this work are the trademarks of their respective owners. While every care has been taken in preparing this work, neither the authors nor Vernon Art and Science Inc. may be held responsible for any loss or damage caused or alleged to be caused directly or indirectly by the information contained in it.

Every effort has been made to trace all copyright holders, but if any have been inadvertently overlooked the publisher will be pleased to include any necessary credits in any subsequent reprint or edition.

Cover's image by Kavita Perry.

Cover design by Vernon Press.

Table of Contents

List of Illustrations	vii
List of Tables	xi
Contributors	xiii
Acronyms	xxi
Introduction	xxiii
Louis Rice, <i>University of the West of England</i> Matthew Jones, <i>Birmingham City University</i>	
Part 1: Home	1
Chapter 1	<i>For a Walk With... dementia, residential care and redevelopment</i>
	Anton Kats
	3
Chapter 2	Health cost benefits of energy upgrades in France
	Veronique Ezratty, <i>Service des Etudes Médicales d'EDF (SEM), France</i>
	David Ormandy, <i>Warwick Medical School, University of Warwick, UK</i>
	Marie-Helene Laurent, <i>EDF R&D, Département TREE, Les Renardières, France</i>
	Anne Duburcq, <i>Cemka, France</i>
	Fabienne Boutiere, <i>EDF R&D, Département TREE, Les Renardières, France</i>
	Laurène Courouve, <i>Cemka, France</i>
	Pierre-Andre Cabanes, <i>Service des Etudes Médicales d'EDF (SEM), France</i>
	25

Chapter 3	The Australian dream or a roof over my head. An ecological view of housing for an ageing Australian population	45
	Matthew Hutchinson, <i>Queensland University of Technology, Australia</i>	
Chapter 4	Integrating health equity into housing in African cities: case studies from Lagos and Maputo	63
	Ebele R.I. Mogo, <i>McGill University, Canada;</i> <i>Engage Africa Foundation</i>	
	Jørgen Eskemose Andersen, <i>School of Architecture, Denmark</i>	
Part 2: City		85
Chapter 5	Nudging towards urban walkability in a car-dependent New Zealand neighbourhood	87
	Sam Keibell, <i>Victoria University of Wellington, NZ;</i> <i>KeibellDaish Architects, NZ</i>	
	Jenny Ombler, <i>University of Otago, Wellington, NZ</i>	
Chapter 6	Reality unraveled through camera lenses: environment as a key issue surrounding infant mortality in Saint Louis City	109
	Vindhya Kakarla, <i>Saint Louis University, USA</i>	
	Anne Niyigena, <i>Saint Louis University, USA</i>	
	Pamela Xaverius, <i>Saint Louis University, USA</i>	
	Deborah Kiel, <i>Missouri Foundation for Health, USA</i>	
	Edie Barnard, <i>Missouri Charter Public School Association, USA</i>	
Chapter 7	Planning for well-being: a critical perspective on embedding well-being in community-led planning processes	137
	Matthew Jones, <i>Birmingham City University, UK</i>	

Amanda Spence,
ALT Architecture, UK

- Chapter 8 **A health map for architecture: The determinants of health and wellbeing in buildings** 155
Louis Rice,
University of the West of England, Bristol, UK

Part 3: Society 185

- Chapter 9 **Co-constructing community wellbeing: developing a framework to identify how student-community collaborative public space projects impact on community wellbeing** 187
Rachel Sara,
University of the West of England, Bristol, UK
Matthew Jones,
Birmingham City University, UK

- Chapter 10 **An inclusive design approach to improving community wellbeing: a case study of architectural interventions in Derry/Londonderry** 205
Jak Spencer,
*The Helen Hamlyn Centre for Design,
Royal College of Art, UK*
Ralf Alwani
*The Helen Hamlyn Centre for Design,
Royal College of Art, UK*
Elizabeth Raby
*The Helen Hamlyn Centre for Design,
Royal College of Art, UK*
Jo-Anne Bichard
*The Helen Hamlyn Centre for Design,
Royal College of Art, UK*
Jonathan West,
*The Helen Hamlyn Centre for Design,
Royal College of Art, UK*

Chapter 11	Active ageing and urban sociability: a study on older women	219
	Thaís Debli Libardoni, <i>Federal University of Pelotas, Brazil</i>	
	Lígia Maria Ávila Chiarelli <i>Federal University of Pelotas, Brazil</i>	
Chapter 12	A place to die: New perspectives on preventive work in adolescent suicide	235
	Charlotta Thodelius	
Index		253

List of Illustrations

Figure 1.1 Care home resident Ted smoking a cigarette. Film still. <i>For a Walk With...</i> 2016	3
Figure 1.2 Antoinette, care manager, doing paperwork. Film still. <i>For a Walk With...</i> 2016	4
Figure 1.3 Frances, care home resident, driven in the wheelchair by Phyllis. Film still. <i>For a Walk With...</i> 2016	6
Figure 1.4 Ted, care home resident, shares his plans of escape. Film still. <i>For a Walk With...</i> 2016	7
Figure 1.5 Rosa, an agency worker, working in the laundry. Film still. <i>For a Walk With...</i> 2016	9
Figure 1.6 Nana, cleaner, hovering the care home. Film still. <i>For a Walk With...</i> 2016	10
Figure 1.7 Pete, kitchen assistant, working in the kitchen. Film still. <i>For a Walk With...</i> 2016	10
Figure 1.8 Mohammad, resident, on his way to have lunch. Film still. <i>For a Walk With...</i> 2016	12
Figure 1.9 Phyllis, activity manager, making a cup of tea. Film still. <i>For a Walk With...</i> 2016	13
Figure 1.10 Ted, resident, sitting at the table. Film still. <i>For a Walk With...</i> 2016	16
Figure 1.11 A map of themes and issues in the Publication <i>For a Walk With: Dementia in the City</i> . 2016	19
Figure 2.1 The HHSRS Formula	30
Figure 3.1 Compounding phenomena	46
Figure 3.2 Conceptualised ecology of housing and support	47
Figure 3.3 Housing and support continuum	50
Figure 3.4 Potential conceptual typology	58
Figure 3.5 The potential conceptual typology expanded	58
Figure 4.1 Bird's eye view of Maputo with the formal city on the horizon. The three-story building in the front is a housing model developed for small narrow plots	63
Figure 4.2 Makoko, a vast slum of wooden shacks built on stilts in the polluted lagoon of Lagos	66

Figure 4.3a, b and c: Maputo houses built with lightweight alternative construction materials	72
Figure 4.4: Maputo solitary block housing model with four single room residences and two units with two room residences with shared facilities (kitchen and toilets) in two courtyards	74
Figure 4.5 Maputo house with a vertical addition to an existing house providing two more units with shared facilities in an outdoor building	75
Figure 4.6 Three floor Maputo house model on an 8 x 10 meters plot. Note the attempt to create a small public space in front of the house	75
Figure 5.1 Site plan of the proposed house showing proposed shared pathway zig-zagging towards the beach. Image credit: Adamson Shaw Surveyors and KebbellDaish Architects, 2017	90
Figure 5.2 Aerial photograph of Mt Victoria showing the suburb of Mt Victoria on the left (West), Hataitai on the right (East), and the 'town belt' along the ridge line between	91
Figure 5.3 Aerial view of Hataitai. The white line is more than 800m long and does not cross a road	92
Figure 5.4 Location plan showing the site in relation to the beach and the no-exit street	93
Figure 5.5 Figure ground map of Hataitai, Wellington showing existing pedestrian pathways (continuous line) and potential paths (dotted line)	94
Figure 5.6 A privately-owned path made available to the public which connects one public pathway to another	95
Figure 5.7 Illustration of the upper section of proposed pathway between new house (left) and existing house (right)	96
Figure 5.8: South elevation of the proposed house. South facade of the new house on Rewa Road that faces the shared pathway is largely opaque except for a glazed kitchen door, some translucent windows and a small balcony	99
Figure 5.9 Site plan of a potential medium density housing development within the existing blocks, showing proposed pathway between streets stitched together from existing private pathways	100
Figure 5.10 Exploded isometric view of proposed densification with varying degrees of privacy from private (lower) to semi-private (middle) and public (upper)	100

Figure 5.11 Study drawing of a public pathway passing over interior space of a private dwelling	101
Figure 5.12: Tolo House Álvaro Siza Vieira. Tolo House (2005) by Álvaro Siza Vieira	101
Figure 6.1a Sub-theme 1: Housing	118
Figure 6.1b Sub-theme 2: Economy	118
Figure 6.1c Sub-theme 3: Physical Environment	119
Figure 6.1d Sub-theme 4: Community Engagement	119
Figure 6.1e Sub-theme 5: Community Safety	120
Figure 6.2 Impact of Housing	121
Figure 6.3a Impact of economic factors	122
Figure 6.3b	123
Figure 6.4a Impact of physical environment	124
Figure 6.4b. Impact of physical environment	124
Figure 6.5a Impact of community engagement	125
Figure 6.5b Impact of community engagement	126
Figure 6.6a Impact of community safety	127
Figure 6.6b Impact of community safety	128
Figure 6.7 Pathway to the Future	130
Figure 7.1 The Shape My Town process	143
Figure 7.2 The Shape My Town website	144
Figure 7.3a and b The pilot workshops in progress	146
Figure 8.1 Health map for policy-makers	162
Figure 8.2 Health map for settlement planning	164
Figure 8.3 Health map for architecture	165
Figure 9.1 Redrawn from South et al.'s Theory of Change Model of Community Wellbeing	191
Figure 9.2 East Street Post-it Note Intervention	193
Figure 9.3 [Re]Claiming Totterdown	194
Figure 9.4 Elm Tree Farm, building for 4 Seasons	194
Figure 9.5 Participatory practices: litter picking, hosting a market stall and community art	195
Figure 9.6 Elm Tree Farm photo collage	197
Figure 9.7 Ebenezer Gate Photo Collage	198
Figure 9.8 Theory of Change Model of Co-Constructed Community Wellbeing (The evolved theory of change model)	200

Figure 10.1 Double diamond design process (adapted from Design Council, 2005)	208
Figure 10.2 The Foyle Reeds	212
Figure 10.3 The Foyle Bubbles	213
Figure 11.1 Synthesis map of each one of the typologies: overlap of the 12 behavioural maps. Authors, 2018	223
Figure 11.2 Antimanicomial manifestation on the esplanade of the Central Square. Wednesday afternoon, May 18	225
Figure 11.3 Antiques fair in the Largo of the Central Public Market. Saturday morning, September 17. Authors, 2016; 2017	225
Figures 11.4 and 11.5 Socialization nuclei of elderly men on the pedestrian street and in front of the cafes. Authors, 2016	226
Figure 11.6 People sitting at the monument observe the activities on the fitness equipment in the urban park. Sunday afternoon, September 18	228
Figure 11.7 Elderly couples place their own chairs to observe the movement of people on the avenue. Sunday afternoon, September 18. Authors, 2016	229
Figure 12.1 Typology of suicidal events	238

List of Tables

Table 2.1 Frequency of spread of harms by severity, adapted for France	31
Table 2.2 Relevant HHSRS Outcomes and Associated Costs (France)	31
Table 2.3 Estimated likelihood taking account of household income	35
Table 2.4 Outline of cost-effective measures	37
Table 2.5 Variations tested in the sensitivity analyses related to the overall estimation of annual medical costs	38
Table 2.6 Annual cost of upgrading energy inefficient dwellings compared with reduction in annual health costs	39
Table 7.1 The seven well-being goals described in the Well-being of Future Generations (Wales) Act 2015	141
Table 11.1 Age and gender frequency in each spatial typology. Authors, 2018	224
Table 12.1 Necessary spatial conditions	243
Table 12.2 Prevention and harm reductive aspects related to place	245

Contributors

Ralf Alwani graduated from the Royal College of Art (Architecture) in 2015. His interests lie in architecture and urban scale interventions. Ralf gained his first degree from the University of Lincoln's Architecture Programme where his final project looked at ageing populations and social neglect within the built environment. Since then, working for architectural practices on a variety of projects involving the public realm, community and residential schemes, Ralf undertook a master's degree at the Royal College of Art, specialising in new towns and large urban projects.

Edie Barnard is the Director of Development and Communications at Missouri Charter Public School Association in St. Louis. Her teaching experience includes Media Law, Media Research, Project Management, Media Ethics, and other media-related courses.

Jo-Anne Bichard is a design anthropologist whose research focuses on multi and inter-disciplinary collaboration, engaging users in the design process. Jo-Anne is co-investigator of Family Rituals 2.0 a multi-disciplinary project exploring how mobile workers maintain family life when away from home and Mapping UK Conveniences incorporating open data into The Great British Public Toilet Map. Jo-Anne was Principle Investigator of Robust Accessible Toilets (RATs) funded by the ESRC's Connected Communities programme; Co-Investigator of Tackling Ageing Continence through Theory Tools and Technology (TACT3) funded by the New Dynamics of Ageing programme and Co-investigator on Welcoming Workplace funded by the AHRC/ESRC Designing for the 21st Century Programme.

Fabienne Boutiere graduated as an engineer from the National Institute of Applied Sciences in the field of Energy and Environment. Within the department Technologies and Research in Energy Efficiency at EDF R&D, she has specialized in the energy efficiency of buildings. She works on various studies in both the tertiary and residential buildings and dwellings. For 10 years, she has been working on energy precariousness in France, more particularly on the definition of indicators and how to participate in energy-efficient building *renovation*; she is a contributor to the French Observatory of Energy Precariousness (ONPE).

Pierre-André Cabanes is a medical doctor specialized in public health. Head of the Medical Studies Department, Electricité de France, advisor to senior management on questions concerning the environment and health since 1999. Founding member of the French Health and Environment Society. General secretary of this society. Editor-in-chief, *Environment, Risques et Santé* (published by John Libbey). Partnership Editor of *Environmental Health Perspectives*. He has co-authored papers for a range of peer-reviewed health and medical journals including *The Lancet*, *Cancer Causes and Control*, *The Environmental Professional*, and *Applied and Environmental Microbiology*.

Lígia Maria Ávila Chiarelli graduated in Architecture and Urbanism from the Federal University of Rio Grande do Sul in the year of 1978. Lígia has a Master's degree in Social Development from the Catholic University of Pelotas (2000), a Master's Degree in Civil Engineering from the Federal University of Rio Grande do Sul (2006) and a PhD in History by the Pontifical Catholic University of Rio Grande do Sul (2014). She is currently an associate professor at the Faculty of Architecture and Urbanism of the Federal University of Pelotas.

Anne Duburcq graduated from the National School of Statistics and Economical Administration (ENSAE) and holds a Master's degree in Public Health (Paris XI Sud) and a specific diploma in environmental risks (ECORISQUE). She worked a few months at the French National Institute of Health and Medical Research (INSERM) and joined in 1994 CEMKA, a consulting firm specialized in health. She is now responsible for the coordination of projects and evaluations in Public Health and Epidemiology at CEMKA. She has extensive experience in the evaluation of health policies/programs/actions, of health care networks and organizations. She also works on the assessment of health practices, pharmaco-economics and epidemiological studies including occupational health. Working at CEMKA for more than 20 years, she has now carried out a large variety of projects covering a wide range of illnesses and health conditions. She has completed more than 200 studies and authored over 20 main articles.

Jørgen Eskemose Andersen is an architect and urban planner and holds a position as Head of Department of Human Settlements (DHS) at the School of Architecture, Denmark. Key activities include Health Institutions in Zambia 1975/77; Municipal Planner Copenhagen, Denmark 1978/79; Researching Urban Planning in Lusaka, Zambia 1979/83; Site & Service Schemes in Mozambique 1984/90; Master Courses on Urban Planning; Ghana, Tanzania, Mozambique, Cape Town, South Africa and Mali, 1994/2006; Urban Environmental Planning and Management. Five Cities, Mozambique,

2002/2005; Sustainable Urban Development, Maputo 2007/2008; Housing: Home Space Maputo, Mozambique. 2009-2012 (www.homespace.dk); Research by Design: Affordable Housing (www.casasmelhoradas.com) 2014-2018

Véronique Ezratty is a medical doctor, and an Environmental Health Risk Assessor at the Medical Studies Department (SEM) of EDF, France. In the department, Dr Ezratty is responsible for topics including Indoor Air Quality, Healthy Buildings, Energy Precariousness, Climate Change, and Endocrine Disruptors. Dr Ezratty has worked with the World Health Organization on energy and health as part of the WHO LARES project, and has worked on thermal comfort in dwellings, including exposure to high and low temperatures.

Matthew Hutchinson is an architect and PhD candidate at the Queensland University of Technology. In Brisbane, Australia. In 2016 he moved to full-time research after 23 years in architectural practice. His most recent position was Partner and National Sector Leader in Seniors Living design for Thomson Adsett architects. In this role, Matthew was responsible for the strategic design and business direction of the firm's Seniors Living sector. Through his professional experience he considers the traditional housing typologies for older people in themselves will be insufficient and inappropriate to meet the needs of the future and that relevant solutions may be found through consideration of socio-economic, policy and environmental forces bearing on this sector. His current PhD research is investigating the nature of potential new typologies to serve Australia's ageing population in the future from within a conceptualized contemporary ecological framework of housing and support for older people in Australia.

Matthew Jones is an architect and Associate Professor at the Birmingham School of Architecture & Design, Birmingham City University. He is a partner at Coombs Jones Architects, an Advocate in Practice for the Design Commission for Wales and a Fellow of the Higher Education Academy. Matthew's work focuses on collaborative and participatory approaches to design and research. He has particular experience in socially engaged and participatory place-making; community-led planning; housing design; and design in rural contexts.

Vindhya Kakarla is a doctoral student in Health Outcomes Research at the Saint Louis University Center for Health Outcomes Research (SLUCOR). As a trained clinician with a master's degree in public health, she aims to work towards the improvement of pediatric and child health outcomes and

disparities. Her research interests include pediatric medicine, maternal and child health, outcome measures development, evaluation of treatment impacts on clinical outcomes, organization, management and utilization of health services.

Anton Kats is an artist, musician and dancer, living and working in Berlin, Germany. Anton's practice derives from informal everyday relationships within a vibrant neighbourhood in Kherson, Ukraine and is complemented through necessity and pragmatics of self-legalisation in Europe via entering formal institutions of education. After attending Masters programmes in Art in Context at the University of Arts Berlin and Interactive Media: Critical Theory and Practice at Goldsmiths College, Kats finalised his studies through a practice-based Ph.D. at Goldsmiths, University of London. In 2016, Kats was invited to join the education team of documenta14 as an artist where he initiated the Narrowcast House and the A-Letheia projects. His works have been exhibited and performed in venues including the Serpentine Galleries, Tate Modern, Tate Britain, Victoria and Albert Museum, the Showroom Gallery and The Haus der Kulturen der Welt among others. Homepage: www.antonkats.net

Sam Kebell is a Senior Lecturer in the School of Architecture at Victoria University of Wellington (VUW) and a Director of KebellDaish Architects. He graduated with a BArch (Hons) from Victoria University of Wellington and an MDes with Distinction (History and Theory) from Harvard University in 1999 before working in Europe and North America. He has won numerous awards for his work and has presented to both academic and professional audiences in New Zealand and around the world. In 2015, Sam was an ADAPT-r Research Fellow at the University of Westminster in London, and he completed his PhD at RMIT University in Melbourne in 2016.

Deborah Kiel's academic and practice experience includes health policy, public health administration, and maternal and child health. Her teaching experience includes public health, public health nursing, management, health policy, and maternal and child health. Her research focus is on reducing our community's unacceptably high rates of infant mortality by improving the health of women before, during, and after pregnancy. She holds a bachelor's degree in nursing, a master's degree in nursing, and a PhD in Public Health Studies from St. Louis University, and currently works for the Missouri Foundation for Health.

Marie H el ene Laurent. *Senior Scientist, EDF R&D.* Since 1998, Marie H el ene Laurent has specialized in the energy efficiency of buildings.

Within the department Technologies and Research in Energy Efficiency at EDF R & D, his research activity focuses on forecasting the energy and power demand of the building sector. She has participated in numerous prospective studies concerning the building sector in countries both in Europe and outside Europe. She is a board member of the London Loughborough Centre for Doctoral Training in Energy Demand and a member of the Scientific Council of the Scientific and Technical Building Center.

Thaís Debli Libardoni graduated in Architecture and Urbanism at the Federal University of Pelotas, UFPel (2010). Thaís holds a master's degree at the Postgraduate Program in Architecture and Urbanism of the Federal University of Pelotas (2018) in the line of Perception and Environmental Assessment by the User. Her main field of research is Environmental Psychology, focusing on intergenerational relations and the promotion of more sustainable and healthier urban public spaces for ageing. She is currently a researcher in the project "Place-Making with Older Adults: Towards Age-Friendly Communities", a partnership between the Behaviour Studies Laboratory of UFPel in Brazil and Heriot-Watt University in Edinburgh, UK.

Fidel Meraz is an architectural educator who has been teaching for several years in Mexico and the UK. He has been a lecturer at both University of Nottingham and Nottingham Trent University. He also taught in the now University of Suffolk designing, validating and leading an Interior Architecture and Design programme. He currently teaches in the Department of Architecture and the Built Environment in UWE Bristol contributing to the theoretical and design studio areas in undergraduate and postgraduate levels. His experience merges informed teaching, theoretical research and contemporary debates aimed at educating with a comprehensive approach. In practice, he has worked in Mexico, Italy and Central America on diverse projects from private housing to commercial fashion malls, taking a leading role from conceptual stages to site supervision. His research interests focus now on philosophical issues about the relationship between architecture, temporality and place such as spatial collective memory, national identity and the perception of wellbeing; his PhD thesis offers a phenomenological account as a critique of modern heritage conservation.

Ebele R.I. Mogo is a Doctor of Public Health with a specialization in community and behavioural health. Her work focuses on research, planning and programming to create healthy communities at multiple scales, often with a focus on rapidly urbanizing emerging contexts and/or underserved

populations. This involves informing decision makers with evidence at the policy level, measuring health equity at the community level, and designing and evaluating products and services to promote health behaviours at the individual level. She is the Principal of ERIM Consulting, a post-doctoral researcher at McGill University Faculty of Medicine and the President of Engage Africa Foundation.

Anne Niyigena is a graduate of Saint Louis University with a Master of Public Health in epidemiology. Her research work has focused on improving maternal and child health outcome through partnering with communities. Anne is also passionate about fighting against sex trafficking and other forms of abuse against women and vulnerable populations. She enjoys fellowship, gospel music and workout.

Jenny Ombler is a Research Fellow in the Department of Public Health, University of Otago Wellington. She graduated with a BA(Hons) and MA with Distinction from Victoria University of Wellington in 2016. Her research with the New Zealand Centre for Sustainable Cities at the University of Otago has included work as an author on Drivers of Urban Change (2015, Steele Roberts), and as co-editor of Cities in New Zealand: Preferences, patterns and possibilities (2017, Steele Roberts). In 2016, she began work on a five-year research programme on homelessness, and on expansion of wellbeing and rights-based frameworks for New Zealand policy.

David Ormandy has a background in public and environmental health. Now attached to Warwick Medical School, he joined Warwick Law School in 1995, where he was responsible for projects to develop the Housing Health and Safety Rating System (now adopted by the US Department for Housing and Urban Development). He has worked with the New Zealand Government, the US Department for Housing and Urban Development, He has been an advisor to the World Health Organization since 2002, involved with the development of the WHO LARES project and is currently a member of the WHO Working Group on Health Housing Guidelines. He is a member of the Scientific Committee of the US National Center for Healthy Housing.

Elizabeth Raby is a designer and researcher, whose work focuses on mental health, graphic design and design as a conversational and behaviour change tool. Lizzie has worked with a range of communities including dependent drinkers, those with mental health difficulties, individuals with autism, Parkinson's patients and those who support and work with these individuals.

Lizzie completed a Master's degree in Information Experience Design at the Royal College of Art (2014).

Louis Rice is a senior lecturer, architect and theorist at the University of the West of England in Bristol, UK. Louis is a member of the *World Health Organisation Collaborating Centre for Healthy Urban Environments* (WHO CC). The WHO CC develops interdisciplinary research examining healthier and more sustainable urban settlements. His research focuses on the relationship between the design of the built environment and human health, particularly specializing in healthy architecture and healthy cities. He has been involved in a number of research and consultancy projects that evaluate the health impacts of the built environment. He is also interested in the integration of innovative new digital technologies to improve data gathering techniques for supporting evidence-based design research. He is the author of numerous books and articles as well as presentations at international conferences on the topic of healthy urban environments.

Rachel Sara is Associate Professor in Architecture and Programme Leader for the Master of Architecture degree at the University of the West of England, Bristol, UK. Her research particularly explores 'other' forms of architecture, particularly through hands-on, community-based architectural activism (see <http://www.hands-on-bristol.co.uk>).

Amanda Spence is an architect and founding partner at ALT-Architecture. ALT-Architecture's ethos is to create buildings and places which are coherently simple, elegantly composed, progressive and imaginative, intrinsically sustainable and, most importantly, embrace the spirit of place. Based in Cardiff but working across Wales and beyond, ALT-Architecture's alternative approach to practice explores the edge of architecture, where it meets the disciplines of art, landscape and theory. This intentionally places them away from the middle of the road and challenges preconceptions of value in architecture. Amanda also teaches at the Welsh School of Architecture, Cardiff University and is a member of the Design Commission for Wales' Design Review Panel.

Jak Spencer is a Research Fellow and leader of the Social and Global Research Space at the Helen Hamlyn Centre for Design. His research interests lie in developing the methods and tools of people-centred design to solve difficult global social challenges. He has a PhD from Loughborough University which developed new models of design for sustainable behaviour from research in Brazil, India and the UK. His current research interests include using new technology to solve social challenges; understanding how

design can create new models for community wellbeing; and people-centred development solutions for low-income countries.

Charlotta Thodelius has an MA in Criminology and is currently conducting her PhD in Architecture. The dissertational research aims to rethink adolescents' injury events and contribute to the development of situational preventive measurements, mainly by modification of the physical environment. The PhD-project is funded by the Swedish Civil Contingencies Agency (Myndigheten för Samhällsskydd och Beredskap).

Jonathan West has spent 13 years working in design and healthcare and leads the Healthcare Research Space at the Helen Hamlyn Centre for Design. Jonathan's research interests include design for patient safety and inclusive design. His work on a new resuscitation trolley for the National Patient Safety Agency won two Medical Futures Innovation Awards and completed successful clinical trials prior to manufacture. He has shaped high profile projects such as Design Bugs Out and Design for Patient Dignity with the Department of Health and Design Council. He was Design Lead on the EPSRC-funded project, 'Designing Out Medical Error'.

Pamela Xaverius is an Associate Professor of epidemiology and biostatistics at Saint Louis University, College for Public Health and Social Justice (SLU-CPHSJ) and the director of the maternal and child health (MCH) concentration in the Master of Public Health program. She has a doctoral degree in psychology and a master's degree in business administration. She teaches undergraduate and graduate courses in public health. As the founding MCH epidemiologist for the state of Missouri and a former NIH health disparity scholar, her scholarly works in preconception, prenatal care, and surveillance are grounded by partnership with communities, practice-based experience, equity and social justice.

Acronyms

3CL	Conventional Consumption Calculation
BRE	Building Research Establishment
CALL	Culture Action Llandudno
CEE	Certificats d'Economie d'Energie
CCBC	Conwy County Borough Council
DCFW	Design Commission for Wales
D-I-Y	Do It Yourself
DNUH	National Directorate of Housing
DPE	Diagnostic de Performance Energétique
EDF R&D	Electricité de France Research and Development
EHCS	English Housing Condition Survey
EHS	English Housing Survey
EPC	Energy Performance Certificate
Eurofound	European Foundation for the Improvement of Living and Working Conditions
FFH	National Housing Fund
GDP	Gross Domestic Product
HES	Hospital Episode Statistics
HHSRS	Housing Health and Safety Rating System
IPEL	Indice de Performance Energétique du Logement
LBW	Low Birth Weight
LDP	Local Development Plan
LSHTM	London School of Hygiene and Tropical Medicine
NCD	Non-Communicable Disease
NICE	National Institute for Health and Care Excellence
NIMBY	Not in my backyard
ONPE	Observatoire National de la Précarité Energétique
PHEBUS	Performance de l'Habitat, Equipements, Besoins et Usages de l'énergie
PMSI	Medical Programme Information System
PPP	Public-private partnerships
Rénovons	Initiative Rénovons
RTPI	Royal Town Planning Institute
SAP	Standard Assessment Procedure
SAS	Statistical Analysis System (a statistical package)
SWOT	Strengths, Weaknesses, Opportunities and Threats

UFPel	Federal University of Pelotas
UN	United Nations
US	United States
WHO	World Health Organization

Introduction

Louis Rice,
University of the West of England

Matthew Jones,
Birmingham City University

This book presents critical thinking from practicing architects, academics, scholars, public health professionals, urban planners, designers, artists and activists from around the world to provide perspectives on design for health. The book reflects a broad set of interrelated concerns about health and the *design* of the spaces we inhabit. It seeks to better understand the interconnectedness and potential solutions to the problems associated with health and the built environment. To that end, it presents emerging research on healthy homes, walkable cities, design for ageing, dementia, health equality and urban poverty, community health services, neighbourhood support and wellbeing, urban sanitation and communicable disease, transport infrastructures and the cost implications of 'unhealthy' environments. Through a series of research chapters based on 'real world' research, it seeks to facilitate joined-up thinking about health and the built environment across disciplines, across scales and across countries. Divided into three key themes, home, city and society, each section presents chapters that explore global processes, transformative praxis and emergent trends in architecture, urban design and healthy city research. The first section explores how the design of *homes* and housing has an effect on human health and wellbeing. The second section examines the implications for health at a much larger scale - that of the *city*. The third section explores issues at the level of *society*, such as community engagement, participatory design and collective action. Through exploration across these scales, the book aims to reveal insights into how designers across disciplines are addressing issues of health in the built environment.

Health and wellbeing defined

Health is defined in the World Health Organisation (WHO) Constitution as "a state of complete physical, social and mental well-being, and not merely the absence of disease or infirmity"¹. The interrelationships between

physiological, psychological and social factors are important in leading a healthy life; the WHO definition links health with wellbeing, a concept often associated with the idea of flourishing: “the experience of life going well... feeling good and functioning effectively”². As the Office for National Statistics describe, “Wellbeing, put simply, is about ‘how we are doing’ as individuals, communities and as a nation and how sustainable this is for the future”³. Wellbeing is seen as consisting of five elements: positive emotions, engagement, relationships, meaning and accomplishment⁴. Here, mental health is equally as important as physical health; health is a positive aspiration, a means to living well⁵: an everyday resource that enables people to lead individually, socially and economically productive lives.

Health issues and the built environment

The urban health threat

While health and wellbeing are influenced by a wide range of factors, an increasing body of research demonstrates that the *design of the built environment* is linked to our health⁶. The World Health Organisation identifies worldwide urbanisation as representing a major threat and challenge to personal and public health. In 1990, fewer than four in ten people lived in urban areas; by 2010, more than half lived in cities and by 2050 this proportion will grow to seven out of every ten people⁷. The ‘urban health threat’ is three-fold: infectious diseases; violence or injury (particularly road traffic); and non-communicable diseases⁸. Infectious diseases are more of an issue in the global south where one billion urban residents live in slums and squatter settlements, while countless others suffer from unsuitable living conditions and overcrowding⁹. In these informal settlements, the poor design and maintenance of sanitary systems and urban environments are linked with tuberculosis, pneumonia and diarrhoeal disease. In both the Global North and South, the quality and affordability of homes affects the health of inhabitants¹⁰. Evidence suggests refurbishing homes is associated with improvements in general health outcomes¹¹; an appropriately designed thermally-efficient home has health and mental health benefits and reduces mortality¹².

In cities and towns, the design of transport infrastructure tends to prioritise the motor vehicle which invariably leads to elevated levels of road traffic accidents, injuries and mortalities. Furthermore, investment in roads increases pollution which has a deleterious effect on health: respiratory illnesses such as asthma are associated with traffic congestion. The complex interrelationships between city layout, transport infrastructure, employment distribution and social conditions produce the urban living conditions that

can exacerbate anxiety, depression, insomnia and substance abuse¹³. Poverty, unemployment and misuse of alcohol or drugs, lead to increased violence and crime¹⁴.

Whilst infectious diseases and injuries are important urban health threats, Non-Communicable Diseases (NCDs), often referred to as lifestyle diseases, are the primary cause of ill-health in almost all countries globally. Lifestyle diseases are so-called because they are interconnected with the way society lives and behaves and the resultant health outcomes. Lifestyle factors such as: sedentary lives, inactivity, over-eating, eating unhealthily, smoking, insufficient sleep and other unhealthy behaviours, lead to a range of common health issues, including heart disease, cancer, diabetes and mental health issues. Furthermore, lifestyle diseases are impacted by factors such as changing neighborhood patterns that often erode community support systems. The design of the built environment is a factor in exacerbating these issues. As many societies are increasingly elderly, ageing populations are often house-bound partly as a result of the urban layout. What connects all aspects of the urban health threat tripartite is that these health issues are a *political* problem. The provision of healthcare and urban development are both influenced by political decisions.

Health inequalities

One of the outcomes of the urban health threat is the spatial influence of wealth; health inequalities are increasing. The holistic view of health, as defined by the WHO, has been described as difficult to achieve for most people¹⁵. Whilst some people do manage to achieve a high level of physical, social and mental well-being, there are severe inequalities, and many people fail to attain such positive health outcomes. Health inequalities have grown across the globe and are exacerbated depending on where you live, work and with whom you socialize. These are often accredited to systemic, socially produced and unfair factors such as social exclusion in housing, transport and access to facilities¹⁶. Health inequalities continue to persist in many countries despite general improvements in health outcomes¹⁷.

Healthcare strategies: *reactive* and *proactive*

Strategies for addressing healthcare issues can be categorized in two opposing fields¹⁸. The first is a *reactive* strategy, whereby healthcare reacts to health issues once they have already developed. This approach to health planning provides care for those that are ill but ignores the broader

environmental or social factors that might be contributing to the illness¹⁹. The second strategy for health care is more *proactive*; healthcare is targeted towards the prevention of health issues developing in the first place. The reactive strategy describes the approach of most health systems globally; the vast majority of all funding and attention currently deals with problems once they arise. The proactive strategy is perhaps the aim of current public health programmes such as WHO Healthy Cities which aims to promote better health, governance, empowerment and participation to create equitable and prosperous communities²⁰. Designing environments to improve wellbeing is part of a proactive healthcare strategy. Designs for a healthy urban environment might have provision for:

“clean air and pure water, contact with nature... good quality and affordable housing, safe and convenient active travel networks... local facilities, ... outside play, convivial meeting places... , a location that gives excellent access to a wide range of jobs, high-level facilities... without recourse to the car”²¹.

However, despite its significance as a determinant of health, there is scant attention paid by designers to the impact of buildings on health and wellbeing^{22, 23}. While there is some awareness and progress at ‘healthifying’ urban planning, for example with greater inclusion of walking, cycling and green infrastructure, there is less action and less emphasis given to the design of the buildings themselves. There are some nascent attempts to better integrate health and architecture, for example, the Wellcome Trust Living with Health exhibition, the new Design for Health journal or the work of the International Well Building Institute. Nonetheless, in terms of architectural design, very few practitioners can yet demonstrate positive health impacts. This is despite the direct effect on health outcomes as a result of the design of individual buildings. As most of our time is increasingly spent in internal environments, architectural space is an increasingly important context for the consideration of health.

Design for health

Evidence from the previous subsections suggest that ‘design’ processes might enable healthier environments and lifestyles; but what is meant by ‘design’, in this context, in terms of proactively facilitating better health? “Design can be defined as the human nature to shape and make our environment”²⁴ or “the conception and realization of new things”²⁵. Cross defines ‘design’ as the third field of knowledge; the first field being science, the second being the humanities²⁶. According to this conceptualization of the practice, ‘design’ is thus distinct from other approaches to producing

knowledge. Design is a processual activity or a form of practice and is characterized as “unstable, heterogeneous, multiply oriented, multivalent, multidisciplinary, polydiscursive”²⁷. Design is practiced by various persons, professions and organisations with differing values, ethics, philosophies, contexts, cultures and traditions, using a divergent variety of techniques and methodologies^{28, 29, 30}.

The term ‘design’ has traditionally referred to the activities and outcomes of design professionals, such as graphic designers, interior designers, product designers, and architectural designers. However, the term ‘design’ now incorporates an expanded field of designers including: “enterprise design, instructional design, social design, network design, user experience design, climate design, sound design, business design, applied design, green design, universal design and market design to name a few”³¹. Indeed, there are claims that almost every aspect of the human experience and global environment is impacted by ‘design’. Baudrillard suggests, “everything belongs to design”³²; Latour agrees, saying “the term [design] no longer has any limit... design has been extended from the details of daily objects to cities, landscapes, nations, cultures, bodies, genes, and ... nature itself”³³. The range of design spans all scales: at the global scale, climate-change necessitates a redesign of our planetary climate³⁴, while at the smallest scale, genetic redesign of the human body is occurring^{35, 36}.

Design is thus undertaken at distinct scales^{37, 38}. These scales can be categorised as: individual product/service; integrated products/services; spatial design; and socio-economic systems³⁹. Effective ‘design for health’ should be achieved through action at all of these scales. The implication is two-fold. Firstly, ‘traditional’ designers need to incorporate greater consideration of health and wellbeing within their own practice and professions. At the scale of ‘spatial’ design, architects need to design healthier homes and workplaces and urban designers need to design healthier streets and cities. The second implication is that health professionals are becoming ‘designers’. At the ‘socio-economic’ scale this concerns redesigning issues such as diets, working patterns and the broader ‘choice architecture’ of contemporary life⁴⁰. It is at this broadest scale that the process of ‘design’ is perhaps the most difficult to achieve or undertake. The interventions and policies of the health professions, as they shift from a *reactive* to *proactive* stance, are (arguably) undertaking a process of (re)design of the human health of a population. Few health professionals see themselves as ‘designers’ (at present), most baulk at the suggestion; however, the interventions being proposed to improve the health of the population meet the definition of ‘design’. A logical conclusion of the trend towards greater interdisciplinary working between

professions from all disciplines: sciences, humanities and design, might be the emergence of a new discipline of 'health design' that endeavours to proactively engender healthier human populations. Just as the World Health Organisation promotes the concept of 'health in all policies', a paradigm shift would be required to deliver a 'health in all designs' approach. Might this paradigm shift in ethics and values perhaps even require the adoption of the Hippocratic Oath for built environment designers? Whilst interdisciplinarity in healthcare (at all scales) to proactively improve health is still in its infancy, in this interregnum between the old and new organizational orders it is not yet clear what new disciplines might evolve to enable greater 'design for health'.

Home

The first four chapters are organized around the theme 'home'. The first chapter uses an artistic-research perspective to creatively explore experiences of living with dementia. The artist Anton Kats investigates walking as a non-representative activity within a diversity of institutional agencies. Elderly people experiencing dementia are invited to 'take a walk...'. This process address issues of care work, residential care, care home redevelopment and care in the city. The case study interweaves participatory methods of art practice and academic research to examine questions of access and infrastructure together with those of art and knowledge production in the context of residential care. The research aims to contribute towards the development of collaborative, dementia friendly and interactive design. In the second chapter, Véronique Ezratty and David Ormandy examine the financial implications of poor health related to housing conditions. A number of different health conditions may arise or be exacerbated due to such poor housing. Many houses cannot attain appropriate internal temperatures because they are difficult or too expensive to heat. Firstly, the research explores the financial cost of these illnesses to the healthcare system and secondly describes the financial cost of upgrading the thermal performance of housing. Whilst all households would benefit from improvements to health it is particularly those households on lower incomes with the greatest financial benefit and health outcomes. The research contributes empirical data to support a financially viable healthcare strategy for proactively intervening in the design of the built environment in order to prevent illnesses. In the following chapter, Matthew Huchinson examines the implications of housing shortages. The research is located in Australia but the issues addressed are relevant in many countries worldwide. At present, Australia is facing the prospect of a serious shortage of appropriate housing,

particularly for its ageing population. The desire to age at home is not well supported partly due to the configuration of the existing housing stock. The effect is most acute for those on lower incomes and experienced by greater numbers of women. The findings establish a number of factors that contribute to the problem, including the prevalence of homogenous car-dependent suburban developments, an ageing population, changes to care funding and inequalities in wealth. Furthermore, new urban development fails to address this challenge. In light of this, a new conceptual typology of housing that is physically appropriate, socially supportive and financially accessible for this context is developed.

The final chapter of the 'home' section looks at the issue from an African perspective. Ebele R.I. Mogo & Jørgen Eskemose examine how urban development strategies in Africa exacerbate health inequities. Informal settlements are very common. Over one billion people now inhabit informal cities and their inhabitants experience higher levels of health inequalities. The physical environment is one of the factors contributing to this inequality: poor sanitation, crime, unsafe housing and exposure to higher risk of natural disaster. Economic factors are also relevant; inhabitants of the informal settlements are often informally employed and are financially excluded from mortgages, health insurance and loans, partly as a result of their informal status. The key challenge to be addressed in informal development is how to provide housing that deals with the incumbent health issues in this context in an affordable manner. The research involves an innovative and creative mode of action research that physically constructs new housing pilot projects within an informal settlement in Maputo, Mozambique. The pilot study contributes to the evidence-base for supporting development mechanisms through which to achieve affordable, healthier housing. Furthermore, the Pan-African empirical work provides much needed, context-specific, knowledge for this urgent issue. Research relating health, homes and informal settlements is essential for improving health outcomes in these urban environments.

City

The second section of the book examines health at the scale of the 'city'. In the first of these chapters, Sam Kebbell & Jenny Ombler explore the possibilities of redesigning a car-dependent suburb in New Zealand. Suburban development, dependent on the motor car as a means of transport, is a driver of much urban sprawl in countries globally and is a significant contributor to climate change emissions. Such suburbs are also associated with more sedentary lifestyles and increased incidence of non-

communicable diseases such as obesity, heart disease and type two diabetes. Recent city planning policies have attempted to reverse urban sprawl trends by increasing densities and encouraging or mandating greater use of active travel. However, retrofitting existing communities remains a difficult design task. In order to explore this challenge further, a 'design research' methodology is applied to a case-study project. Visualisations of retrofit solutions to make city neighbourhoods more walkable are designed and critically evaluated as part of this exploratory pilot study. The next chapter by Vindhya Kakarla, Anne Niyigena, Pamela Xaverius, Deborah Kiel & Edie Barnard looks at the prevalence of child mortality in the city of St. Louis, USA. There are severe health inequalities in this city, with African American children particularly suffering from higher rates of mortality. Whilst many factors relate to access to, and the quality of, medical care, there are a number of contributing urban and spatial issues that this research focuses on. The research methodology interweaves photos, narratives and the voices of women who live with the experience of infant death to provide a more integrated and holistic approach in considering environmental influences on infant mortality. A number of themes related to the design of the built environment emerge: housing, physical environment, economy, community safety and community engagement. The aim of the research is to provide knowledge that may aid in reducing risk factors and improving infant health outcomes.

The third chapter in the 'city' section explores wellbeing in relation to community-level participatory design. The research is borne from the introduction of the Well-being of Future Generations (Wales) Act (2015). This legislation embeds healthy and sustainable development into the Welsh national political framework, committing all public bodies to improving social, economic, cultural and environmental wellbeing. Accompanying this top-down legislative mechanism is an emerging determination to also increase bottom-up participation of individuals and communities in this process. The research focuses on how wellbeing might be better integrated into the design of the built environment through the participation of the local community. However, there is little guidance or support available for local people in considering the wellbeing of their community. A 'Shape my Town' toolkit is devised to engage local people in considering the health and well-being of their built environments. This research adopts an exploratory 'design research' strategy, merging aspects of the design and governance of the built environment with community-level participatory approaches in order to improve wellbeing. The findings determine that whilst the tool can contribute to community participation and the identification of key health issues for each context, there is still a need for design professionals within

the process in order to fully realize the potential benefits of the wellbeing legislation.

In the last chapter in the ‘city’ section, Louis Rice develops a new framework and definition for ‘healthy architecture’. The chapter identifies specific issues within the scope of built environment design professionals for creating healthier architectural environments. The research reveals that ‘healthy architecture’ goes beyond the relatively narrow focus of current safety regulations or environmental health legislation. The proposed conceptualisation of ‘healthy architecture’ considers broader social, mental and physical health and wellbeing issues. The methodology is based on a review of research from medical and public health fields to establish evidence-based interrelationships between health and architecture. A ‘health map for architecture’ establishes four domains of architectural design related to health: materials, environments, agency and behaviours. Each of the four domains is considered with respect to the three facets of human health: mental, physical and social. The framework may be used by built environment experts, architects, engineers, clients, user groups, public health professionals and planning and policy makers to inform and improve the design of the built environments to promote and facilitate health and wellbeing.

Society

The final section of the book brings together research that examines health from a ‘societal’ perspective. Rachel Sara & Matthew Jones present the work of the Hands-on-Bristol collective, a platform bringing together community members, architects, trainee architects and academics to work together to empower local communities. The practice of the collective is conceived of as a form of spatial agency to empower communities through involvement in making and re-making their local urban spaces. The research draws on theories for improving community wellbeing through the interrelated processes of empowerment and activism. The chapter describes how the ‘design research’ projects involve an ongoing process of community engagement, participation and co-creation to generate and catalyze possibilities that might otherwise not be unlocked. Empirical case-study projects are evaluated to better understand the impacts on community wellbeing. The research identifies a positive impact for these projects on wellbeing and empowerment, but highlights the complexities of real-world timeframes and negotiating with the structures of power. The next chapter explores creative processes for improving community wellbeing. An interdisciplinary team worked with a local community in Northern Ireland to co-design solutions to local social

and health issues. The case-study area has high levels of mental health problems combined with very low levels of employment. The case-study projects worked with universal design principles to create two physical interventions in the built environment that respond to the community's issues. The approach is particularly innovative in combining a mixture of disciplines, using art practice with architectural interventions and participatory design, anthropology and healthcare research. The findings point to the contribution that built environment solutions might make to social, behavioural and psychological health issues in an urban context.

In the penultimate chapter, Thais Libardoni and Ligia Chiarelli explore urban sociability, particularly for older women, in Brazil. Ageing populations are an emerging issue for many nations and raise a number of health issues and challenges. The project explores the issue from an urban design perspective. The World Health Organisation (2002) describe 'active ageing' as, "the process of optimizing opportunities for health, participation and security in order to enhance quality of life as people age"⁴¹. In urban settings, this may include greater social participation of the elderly, for example through the design of public space to encourage social interaction. The chapter examines an empirical case-study mapping approach to explore intergenerational issues in urban space. The research focuses on elderly women and points out that despite the majority of the elderly population being female, they are under-represented in publicly accessible city-spaces. The research points to the need to address this spatial asymmetry in order to improve health inequalities. The final chapter of the book ends with an examination of suicidogenic environments. Globally, over 800,000 individuals die due to suicide each year. In Sweden alone, approximately forty adolescents under the age of twenty commit suicide annually. The design of the built environment can be conceived as part of strategic thinking toward the prevention of suicide. Charlotta Thodelius describes the importance of 'place' for suicidal acts; the chapter reveals that by analysing spatial elements, more effective preventive strategies can be developed to help reduce the incidence of suicide.

Critical reflections

The book reveals a body of interdisciplinary research exploring the boundaries of health and built environment design. Such interdisciplinarity is welcome as it enables health issues to be approached from a variety of perspectives through different strategies and tactics. The book brings together healthcare design, community activism, architecture, epidemiology, product design, design anthropology, public health, art

practice, urban planning, criminology, action research, participatory design, environmental science and philosophy. Whilst this interdisciplinarity is creative, innovative and often sheds new light onto these research areas, there are tensions in working across, and within, different methodologies, research practices and sometimes conflicting discourses. There is much work yet to do to better integrate these diverse disciplines and professions; 'design for health' is a relatively young field. Researching through a 'designerly way of knowing', sometimes described as a 'design research methodology', is often unfamiliar to those from a science or humanities background. This book provides substantive evidence of a *designerly* approach to research. This research is timely and urgent; the health issues facing society are burgeoning. The design of homes, cities and societies plays an important role in determining many health outcomes. At present, too many design decisions are (perhaps inadvertently) nudging individuals towards unhealthy lifestyles. A radical paradigm shift in values and ethics may be required to enable the '*health in all policies*' aspiration to be translated into a '*health in all designs*' reality.

References

- ¹ World Health Organisation, *Ottawa Charter for Health Promotion*. (Geneva: WHO, 1986).
- ² Felicia A. Huppert and Timothy T.C. So. "Flourishing across Europe: Application of a new conceptual framework for defining well-being," *Social indicators research* 110, no. 3 (2013): 837-861.
- ³ Office for National Statistics, quoted in "*What is Wellbeing?*", What Works Wellbeing, accessed December 20, 2018: <https://whatworkswellbeing.org/about/what-is-wellbeing/>.
- ⁴ Martin E. Seligman, *Flourish: A visionary new understanding of happiness and well-being*. (New York: Atria Paperback, 2013).
- ⁵ Ian Crinson, *Concepts of Health, Wellbeing and Illness, and the Aetiology of Illness Index*. (Bucks: Public Health Action Support Team, 2018). Accessed December 5, 2018, <https://www.healthknowledge.org.uk/public-health-textbook/medical-sociology-policy-economics/4a-concepts-health-illness>.
- ⁶ Public Health England, *Spatial Planning for Health: An evidence resource for planning and designing healthier places*. (London: Public Health England, 2017): 6.
- ⁷ World Health Organization & United Nations, *Hidden cities: unmasking and overcoming health inequities in urban settings*. (Geneva: World Health Organization, 2010).
- ⁸ World Health Organization & United Nations, *Hidden cities: unmasking and overcoming health inequities in urban settings*. (Geneva: World Health Organization, 2010).

- ⁹ World Health Organization & United Nations, *Hidden cities: unmasking and overcoming health inequities in urban settings* (Geneva: World Health Organization, 2010).
- ¹⁰ Simon Nicol, Mike Roys, David Ormandy and Veronique Ezratty, *The cost of poor housing in the European Union* (Watford: BRE, 2010).
- ¹¹ Hilary Thomson, Sian Thomas, Eva Sellstrom, and Mark Petticrew, "Housing improvements for health and associated socio-economic outcomes," *Cochrane Database of Systematic Reviews*, no.2 (2013).
- ¹² Marcia Gibson, Mark Petticrew, Clare Bambra, Amanda J. Sowden, Kath E. Wright and Margaret Whitehead, "Housing and health inequalities: a synthesis of systematic reviews of interventions aimed at different pathways linking housing and health," *Health & Place*, 17 no. 1 (2011): 175-184.
- ¹³ Giovanni Caracci, "Urban mental health: an international survey". *International Journal of Mental Health*, 35 no.1 (2006): 39-45.
- ¹⁴ World Health Organization & United Nations, *Hidden cities: unmasking and overcoming health inequities in urban settings*. (Geneva: World Health Organization, 2010).
- ¹⁵ Machteld Huber, André Knottnerus, Lawrence Green, Henriëtte van der Horst, Alejandro R. Jadad, Daan Kromhout, Brian Leonard, et al., "How should we define health?" *Bmj*, 343 no.7817 (2011): d.4163-237.
- ¹⁶ Margaret Whitehead & Goran Dahlgren, *Concepts and principles for tackling social inequities in health: levelling up part 1* (Copenhagen: World Health Organization Regional Office for Europe, 2006).
- ¹⁷ Department of Health, *Health Inequalities: Progress and Next Steps* (London: Department of Health, 2008).
- ¹⁸ John Ashton, *Healthy cities* (Milton Keynes: Open University Press, 1992).
- ¹⁹ Hugh Barton, "Introduction" in *The Routledge Handbook of Planning for Health and Well-being: Shaping a Sustainable and Healthy Future*, ed. Hugh Barton, Susan Thompson, Marcus Grant and Sarah Burgess (London: Routledge, 2015), xxxiii.
- ²⁰ World Health Organization & United Nations, *Hidden cities: unmasking and overcoming health inequities in urban settings* (Geneva: World Health Organization, 2010).
- ²¹ Hugh Barton, "Introduction" in *The Routledge Handbook of Planning for Health and Well-being: Shaping a Sustainable and Healthy Future*, ed. Hugh Barton, Susan Thompson, Marcus Grant and Sarah Burgess (London: Routledge, 2015), xxxiii.
- ²² Kelly Hunstone, Ammar Mesari and Eloise Pinchera, *Healthy placemaking: Why do built environment practitioners create places that contribute to preventable disease and early death, despite evidence on healthy placemaking?* (London: Design Council and Social Change UK, 2018).
- ²³ Louis Rice, "Healthy architecture: A conceptual framework for the integration of public health into the architectural profession," in: *World Health Organisation International Healthy Cities Conference*, Belfast, Northern Ireland, 1-4 October 2018.

- ²⁴ John Heskett, *Toothpicks and Logos: Design in Everyday Life* (Oxford: Oxford University Press, 2002): 7.
- ²⁵ Nigel Cross, "Designerly ways of knowing", *Design studies*, 3, no.4 (1982): 221.
- ²⁶ Nigel Cross, "Designerly ways of knowing", *Design studies*, 3, no.4 (1982).
- ²⁷ Stuart Kendall, "Positioning Design Studies: An Institutional Challenge," *Design and Culture*, 6, no.3 (2014): 345.
- ²⁸ Louis Rice and David Littlefield, "Introduction," in *Transgression: Towards an Expanded Field of Architecture* ed. Louis Rice & David Littlefield, (Oxon: Routledge, 2014), 1-9.
- ²⁹ Herbert Simon, *The Sciences of the Artificial* (Mass: MIT press, 1999).
- ³⁰ Donald Schön, *The Reflective Practitioner* (London: Basic Books, 1983).
- ³¹ Penelope Dean, "Free for all" in *The Routledge Companion to Design Studies*, ed. Penny Sparke and Fiona Fisher (London: Routledge, 2016), 21.
- ³² Jean Baudrillard, *For a Critique of the Political Economy of the Sign* (St Louis: Telos Press, 1981), 200.
- ³³ Bruno Latour, "A cautious Prometheus? A few steps toward a philosophy of design (with special attention to Peter Sloterdijk)", in *Proceedings of the 2008 annual international conference of the design history society* (2008): 2.
- ³⁴ Peter Sloterdijk, *Terror from the Air* (Los Angeles: Semiotext(e), 2009).
- ³⁵ Russell Blackford, *Humanity Enhanced* (Mass: MIT press, 2014).
- ³⁶ Jürgen Habermas, *The Future of Human Nature* (Cambridge: Polity Press, 2003).
- ³⁷ Frank-Martin Belz, "A transition towards sustainability in the Swiss agri-food chain (1970–2000): using and improving the multi-level perspective", in *System Innovation and the Transition to Sustainability: Theory, Evidence and Policy* ed. Boelie Elzen, Frank W. Geels and Kenneth Green (Cheltenham: Edward Elgar Publishing, 2004), 97-114.
- ³⁸ Kees Dorst, "The core of 'design thinking' and its application," *Design studies*, 32, no.6 (2011): 521-532.
- ³⁹ Fabrizio Ceschin & Idil Gaziulusoy, "Evolution of design for sustainability: From product design to design for system innovations and transitions," *Design Studies* 47, (2016): 118-163.
- ⁴⁰ Richard H. Thaler and Cass R. Sunstein, *Nudge: improving decisions about health, wealth and happiness* (London: Penguin Books, 1975).
- ⁴¹ World Health Organization, *Active Ageing: A Policy Framework* (Geneva: WHO, 2002), 12.

PAGES MISSING
FROM THIS FREE SAMPLE

Index

A

Abergavenny, 144, 145
Active ageing, 219
Active Travel (Wales) Act 2013,
140, 147
adolescent, 235
affordability, xxiv, 46, 115, 120
affordable housing, xxvi, 18, 69,
71, 88
age-friendly, 220
ageing, xxiii, xxix, xxxii, 14, 46,
48, 53, 59, 149, 214, 219, 220
agency, xxxi, 8, 9, 12, 17, 155,
166, 168, 169, 188, 189, 193,
198, 204
air pollution, 64, 70, 114, 123
architecture, xxvi, 9, 76, 87, 155,
159, 200

B

behavioural mapping, 222
Brazil, 219
Brecon Beacons National Park,
141, 144, 147, 150

C

civic agency, 188, 189
civic agent, 200, 202
co-design, xxxi, 193, 196, 201,
206, 208
collaboration, 5, 17, 65, 69, 73,
128, 152, 160, 197, 206
community engagement, xxiii,
xxx, xxxi, 117, 119, 120, 125,
139, 150, 151, 192, 213
community safety, xxx, 117, 120,
127

community wellbeing, xxxi, 187,
188, 190, 200, 201, 206, 207

D

densification, 57, 73, 98, 100, 103
Derry/Londonderry, 206, 207,
214
Design Commission for Wales,
141
design for health, xxiii, xxvi, xxvii
design research, xxx, xxxi, 104,
138, 208
desperate suicide, 238, 243, 248
determinants of health, 155
diseasogenic, 156, 171
dramatic performance, 236

E

economy, xxx, 47, 117, 118, 120,
163, 210, 215, 216
education, 18, 25, 39, 77, 109,
122, 146, 158, 161, 214
elderly women, xxxii, 220, 223,
229
energy efficiency, 27, 29
environmental health, xxxi, 30
environmental stressors, 111,
205
excess cold, 28, 30

F

fuel poverty, 27

G

gender representation, 229
green space, 98, 104, 143, 150

H

health map, 155, 162, 164, 170
 healthy ageing, 219
 healthy architecture, xxxi, 160,
 165, 170, 171
 housing access, 65, 68
 housing health and safety rating
 system, 26, 28
 housing quality, 71

I

identity, xvii, 15, 20, 149, 223,
 227
 Inclusive Design, 206, 207, 208,
 214, 216
 infant, 109
 infant health, xxx, 110, 114, 120,
 122, 127
 infant mortality, 109, 111
 infrastructure, xxiv, xxviii, 8, 58,
 64, 66, 68, 71, 73, 77, 88, 92,
 94, 99, 126, 138
 instrumental suicide, 238, 241,
 243, 246, 248
 investment, xxiv, 18, 37, 40, 64,
 67, 69, 76, 152, 211

L

live project, 189, 197
 Llandudno, 145, 147, 149, 150
 localism, 138, 140

M

materials, xxxi, 66, 68, 71, 76,
 143, 155, 166
 mental health, xxiv, xxxii, 5, 48,
 103, 156, 157, 160, 166, 168,
 170, 199, 205, 207, 210, 211,
 214, 215, 220

N

neighbourhood, xxx, 9, 11, 12,
 17, 18, 47, 88, 92, 93, 97, 102,

103, 113, 138, 139, 158, 169,
 191, 196, 199
 neighbourhood planning, 139
 New Zealand, xxix, 26, 28, 39, 87,
 110
 non-communicable disease,
 xxiv, xxv, xxx, 156
 nudge, 102, 156

O

Our Future Foyle, 206, 214

P

pan-African, xxix, 64, 65, 76
 participation, xxvi, xxx, xxxi, 16,
 103, 116, 137, 138, 140, 144,
 152, 188, 189, 192, 196, 201,
 220, 230
 participatory action research,
 189
 pedestrian, 89, 92, 103, 145, 211,
 222, 226, 230
 Pelotas, 221
 photovoice, 116, 125, 128
 physical environment, xxix, xxx,
 55, 117, 120, 168, 236, 244
 place analysis, 237
 place-based interventions, 245,
 247
 Planning (Wales) Act 2015, 139,
 140
 planning policy, 139, 140, 147,
 148, 150
 prevention, xxvi, xxxii, 166, 209,
 219, 244, 248
 public housing, 67
 public space, xxxii, 13, 19, 96, 98,
 142, 145, 146, 148, 187, 189,
 202, 207, 212, 215, 220, 221,
 227
 public-private partnerships, 66,
 74, 77

R

regeneration, 7, 18, 140, 149,
 152, 187, 216

S

Saint Louis, 110, 129
sanitation, xxiii, xxix, 64, 67, 71,
123
sense of place, 143, 227
Shape My Town, xxx, 138, 141,
143, 147, 152
slum communities, 67
slum formation, 64, 67, 77
socioeconomic factors, 65, 77,
110
substandard housing, 112, 121
suburb, xxix, 48, 50, 57, 89, 91,
93, 97, 98, 104
suburban housing, 156
suicidal script, 241, 243
suicidal situation, 235, 238, 239,
241, 242, 243, 244, 247, 248
suicide, xxxii, 206, 207, 209, 235,
237, 238, 241, 243, 245, 246,
247
suicidogenic places, 245, 248

T

thermal comfort, 26
third space, 96, 103, 227
traditional suicide, 238, 243, 244,
247, 248

transport, xxiv, xxv, xxix, 6, 47,
70, 87, 91, 98, 102, 103, 148,
149, 157, 163

U

United States, 109, 113
University, 28, 129, 188, 189
urban design, xxiii, xxxii, 89, 101,
102, 104, 138, 143, 152, 163,
214, 216
urban health, xxiv, 64
urban poor, 64, 65, 67, 74
urbanization, 65, 66, 74

W

Wales, 26, 28, 137, 140, 141, 147,
150, 151
walkability, 87, 102
wellbeing, xxiii, xxvi, xxvii, xxx,
14, 64, 87, 103, 104, 120, 123,
155, 157, 160, 164, 169, 187,
188, 189, 202, 206, 207, 211,
214, 216
Well-being of Future Generations
(Wales) Act 2015, 137, 140, 147
Wellington, 88, 91, 94, 104
World Health Organisation, xxiii,
xxiv, xxviii, xxxii, 157, 189

