AD

DESIGNING FOR THE THIRD AGE

Architecture Redefined for a Generation of 'Active Agers'

GUEST-EDITED BY
LORRAINE FARRELLY

DESIGNING FOR THE THIRD AGE
ARCHITECTURE REDEFINED FOR A GENERATION OF 'ACTIVE AGERS'

02 / 2014

ᐰD

ARCHITECTURAL DESIGN

GUEST-EDITED BY
LORRAINE FARRELLY

DESIGNING FOR THE THIRD AGE: ARCHITECTURE REDEFINED FOR A GENERATION OF 'ACTIVE AGERS'

36

'Self-determined life in its entirety is careful long-term planning, which can only happen when ageing is acknowledged as a state of human existence, and as such deserves preparation, anticipation and excitement.' — Matthias Hollwich

112

FSC
MIX
Paper from
responsible sources
www.fsc.org   FSC® C015829

Front cover: Hollwich Kushner (HWKN), Boom
Palm Springs, Palm Springs, California, 2011.
© Hollwich Kushner (HWKN)

Inside front cover: Michael Maltzan Architecture,
New Carver Apartments, Los Angeles, California,
2009. © Iwan Baan

EDITORIAL
Helen Castle

Ageing is perhaps one of the most pressing topics of our times. Most of the articles in this issue open with gobsmacking statistics, highlighting the extent to which the population of over-65s is growing exponentially – whether in the US, Europe, Australia, India or China. The impact of an ageing population is felt on the population as a whole and cuts across the entire physical environment. As the retirement age retreats even further away from the horizon for those in work, it also squeezes the career chances of younger people attempting to enter work. Whereas opportunities for architectural design for the aged have conventionally been confined to the highly standardised and uninspiring requirements of the retirement or nursing home, most building types and the urban environment as a whole now need to be reconsidered, modified or adapted to respond to demographic change. Japan, which has the highest life expectancy in the world, provides some key insights into what countries with a greater percentage of older people and falling birth rate might look like. In fact Kunio Kitamura, Head of the Japan Family Planning Association, has expressed the opinion that the demographic crisis is currently so serious there that Japan 'might eventually perish into extinction'; last year was the first year in Japan that incontinence pads outsold baby nappies.[1] It seems no building type in Japan is exempt from the needs of older people. Japan already has a prison population where over 20 per cent of inmates are over 65. This has required that specialist prison blocks are fitted out for older prison mates with handrails in the corridors.[2]

In developing and commissioning the content for this △, a strong emphasis was placed on presenting ageing as a positive and international issue in order to engage a wide global audience of architects and students. The cover image by New York architects Hollwich Kushner (HWKN) of their Boom Palm Springs project consciously stretches the stereotypical notion of ageing in its vibrancy and age and gender profiling. For the increase in the ageing population, which the bulging baby-boom generation now brings, should be grasped as a unique opportunity to develop new thinking and ideas around active ageing: to the benefit of society and the environment as a whole. Key to this concept is the 'Housing from 8 to 80' student design competition that Guest-Editor Lorraine Farrelly and △ launched asking students to design lifetime homes (see pp 126–35). This holistic emphasis on ageing as an issue that cannot be severed from the needs of the rest of the population has also been accommodated in the volume by the invitation to architectural historian, critic and author Jayne Merkel to provide a Counterpoint (pp 136–41) that answers up on the side of the younger population. Could the need for affordable housing among young adults be greater than if not equal to those of older generations? △

Notes
1. Abigail Haworth, 'Generation Sexless: What Happens to a Country when its Young People Stop Having Sex? Japan is Finding Out …', *The Observer Magazine*, 20 October 2013, pp 22–9.
2. 'No Sex Please We're Japanese', presented by Anita Rani, BBC2, 24 October 2013.

The Third Space, University of Portsmouth, 2010
The Third Space is a new social learning space for students at the
University of Portsmouth. The concept was designed by Lorraine
Farrelly working with the university's Project Office.

Lorraine Farrelly qualified as an architect through an academic and then practice-based education. She began her academic career at the University of Portsmouth, to where she later returned initially as a design tutor before being appointed Professor of Architecture and Design in 2011. This followed a period in practice in London and Hampshire during which she worked on projects ranging in scale from retail fit-outs to housing and masterplanning. She initially taught part-time and worked in practice, and this combination of practical experience and education has been an important aspect of her professional career, with both informing the other. Challenging the evolving debate around architectural education nationally and internationally requires a response to the expectations of the real world, the client, other disciplines and society.

She has written many international papers as well as seven books on architecture, urban design and interior design. Her specific interest is housing and its relationship to the city. She has been part of Design Review, a forum of appointed professionals organised by planning authorities across the UK to inform discussion about the quality of architecture and place making and advise on strategic architectural and urban design proposals. She has also written about educational environments and their relationship to the university campus and the city context. She is currently a consultant architect for, and part of the management group of the University of Portsmouth's Project Office, an architectural consultancy under the umbrella of the university's School of Architecture, which provides knowledge transfer, consultancy and research opportunities for full-time and part-time staff and students, working on 'live' projects with 'real' clients. ⌂

REDEFINING, REINVENTING AND REALIGNING DESIGN FOR DEMOGRAPHIC CHANGE

INTRODUCTION
By Lorraine Farrelly
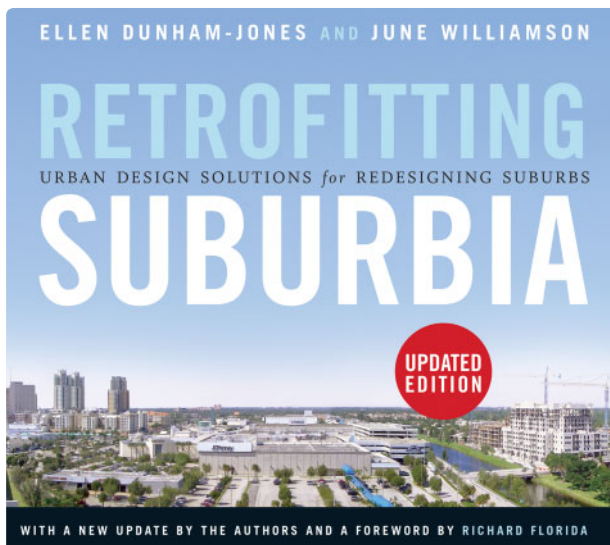
By 2035, more than a third of the UK population will be over 60.[1] In the US, over the next four decades, the government's Administration on Aging department predicts that the ageing population will account for 1 in 5 US residents.[2] And in China, the number of the population over 60 is predicted to be 336 million by 2030, a quarter of the population;[3] coupled with the country's one-child policy implemented in the 1980s, this means that there is a diminishing number of the population to care for ageing parents and grandparents, referred to as the '4:2:1 Paradigm': four grandparents, two parents and one child.[4]

All of this has social implications for our responsibility for the elderly, while the demographic shift also presents challenges in terms of expectations for urban design, housing and other built provision to accommodate an ageing population. The design of our urban centres needs to change to encourage a more integrated way of living.

Suburbia needs to be redefined as a new type of interstitial space. In the US, the concept of retrofitting and reinventing suburbia has created new paradigms, as our residential patterns change and more diverse housing choices, or integrated living solutions, are required. The 'retrofitting suburbia' concept was introduced by Ellen Dunham-Jones, Professor of Architecture and Urban Design at Georgia Tech in Atlanta. In her book with June Williamson, *Retrofitting Suburbia*, she challenges existing preconceptions of the city. One of the many concepts that Dunham-Jones and Williamson put forward is the future creation of integrated environments for our society; accommodating a range of different age groups is about adapting places and spaces to their needs, as much as adapting the city for different cultural groups. Sustainable cities for all, inclusive of age, can be achieved through re-inhabitation, re-greening and redevelopment.[5]

How can visionary architectural solutions for living in sustainable cities accommodate the change in population, reducing models of dependency for care and transport and creating

Cover of Ellen Dunham-Jones and June Williamson's
Retrofitting Suburbia: Urban Design Solutions for Redesigning Suburbs, 2011
The book describes the possibility for suburban developments to be redesigned into more sustainable places, to evolve and respond to changing economic and social conditions.

Sustainable cities for all, inclusive of age, can be achieved through re-inhabitation, re-greening and redevelopment.
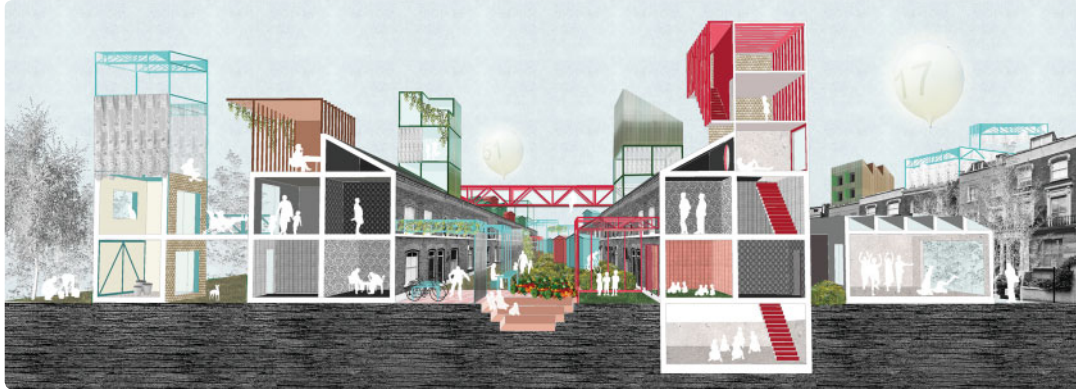
opportunities for recreation, leisure and work? This problem needs to be addressed at the strategic level of the city, as reflected in the World Health Organization's Global Network of Age-Friendly Cities and Communities initiative,[6] considering adaptable sustainable environments that allow for independent living, and cater for all cultural and demographic groups. It must also be understood at the scale of the individual, with innovative responses to the planning of homes, and even furniture design, to create living spaces that can adapt to changing circumstances.

Ageing is inevitable, so a population that lives longer is a positive prospect for all of us as individuals, and an achievement for society. Figures from the World Health Organization illustrate that the average age of life expectancy is now 70, as opposed to just 64 in 1990.[7] For higher-income countries, this rises to 80, while in low-income countries the average age is 60. However, the important issue here is the quality of life of this new extended lifetime. Appropriately designed responses are thus required in our cities, buildings and homes. The cities we live in need to be accessible, and neighbourhoods and homes need to be adaptable to our changing expectations and physical limitations in terms of mobility and lifestyle.

In the UK, the Royal Institute of British Architects (RIBA) Building Futures think-tank, under the Chair of Dickon Robinson, has sent out a call to action to architects, urbanists,

government, policymakers and educators to respond to demographic change with the launch of its engaging illustrated report 'Silver Linings: The Active Third Age and the City'.[8] Building Futures highlights not only how the UK population is simultaneously growing and ageing, with more than 40 per cent of the population being over 60 in two decades' time, but also how increasing numbers could, in the future, enjoy an active life into their 60s and mid-70s and how the city needs to adapt to respond to this. It does this in concrete terms by providing six speculative scenarios at various urban scales to highlight the potential positive impact of an active third age in shaping the evolving city: a club-like mansion block, the intergenerational family home, a revived high street, a regenerated seaside resort, the pop-up university and the provision of urban health hubs.

As highlighted by the RIBA report, an ageing population will have a range of impacts on society. There will be pressure on families to care for relatives, and on employers to consider different working times and adapt existing working environments. Our homes will need to be flexible in terms of their planning to meet these changing circumstances. We will need new housing typologies that include facilities with associated care, as well as sheltered housing with live-in support. These might range from fully independent living for the active elderly in small units to more integrated communities.

New Communities, New Contexts

Traditionally, and across many cultures, the courtyard house has been a solution that allows large families to live together, sharing the open courtyard as a communal space. This concept still forms the basis of some contemporary housing across Scandinavia, but also in China, India and South America. Traditional solutions are thus a relevant precedent for informing contemporary ideas for housing. In his article 'China's Concealed Crisis' (pp 68–73), Edward Denison and Guang Yu Ren refer to these traditional Chinese housing forms, while Radhika Vaidya and Anjali Raje (pp 60–67) look at the situation in India, focusing on the building of inclusive communities.

There are also possibilities to develop environments where intergenerational communities can live together and support one another. The crises of housing availability and, therefore, affordability in many economies mean that the younger generation often cannot find suitable housing solutions. Ideas such as multi-generational home sharing and cohousing offer solutions not just for older people, but can also provide younger generations with comfortable places to live. Though these options might not suit everyone, flexibility in terms of choice is important.

The many international examples that demonstrate new ways of living in response to these challenges are influenced not only

by financial investment, but also by cultural and social attitudes. In the US, the Department of Housing and Urban Development encourages intergenerational families to live together, as by doing so they provide their own inherent support system: from the elderly supporting children and providing childcare, to the children caring for parents and grandparents as they become more dependent. Capital funding has therefore been provided for these projects, an example of which is the Roseland Grandfamily Apartments in Chicago, a US$2 million project to create 10 units for 34 residents of all ages, offering a real cross-section of the community, which was completed in 2011.[9]

In this issue, Kathryn Firth and Manisha Patel's article on the Queen Elizabeth Olympic Park (pp 88–93) in East London focuses on PRP Architects' multi-generation house as part of the sustainable regeneration of this part of the city. Here, PRP have designed larger houses as flexible adaptable homes. Matthias Hollwich and Matthew Hoffman of HWKN architects in New York refer to this multi-generational concept in their article (pp 20–27), which considers shared housing typologies with shared social and individual sleeping spaces.

Regeneration is also about the creation of mixed communities. Le Corbusier's Unité d'Habitation in Marseilles (1952) is a good example of a community that was created as a multi-family environment with carefully designed public spaces to support the idea that this was a city within a city, and to encourage people to socialise and identify with one another at the neighbourhood scale. The community interaction was designed for all generations, replacing the street as the space to interact with new recreation areas.

In Singapore, SCDA Architects are creating 'apartments in the sky' with landscaped terraces at various levels. Their SkyTerrace@Dawson multi-generational complex (due for completion in 2015) near Singapore's Downtown area accommodates the elderly in studio apartments attached to larger duplex units, allowing ageing parents to be located alongside children and grandchildren while also maintaining their independence. Designed as precast units, each apartment is prefabricated off-site as a set of modules that are easily assembled on site. On an adjacent site, WOHA Architects are also developing the 'sky village' concept in SkyVille@Dawson, also due to be completed in 2015. These 11-storey neighbourhoods centred around communal gardens encourage residents to interact around garden spaces. They are literally villages in the sky, stacked on top of one another with shared social spaces. Both of these housing solutions respond to the economic as well as the social climate; that is, to the pressure for sustainable design and the country's rapidly increasing population.

In April 2013, in his 'Housing and Intergenerational Fairness' report, Alex Morton, Head of Housing, Planning and Urban Policy at Policy Exchange (a charity responding to UK government planning policy issues) set out recommendations calling for the planning system to undergo reforms to encourage developers to build more homes, including bungalows attractive to older people looking to downsize.[10] The intention is to try to free up larger homes for younger families and help to reduce the generational divide. Solutions to this problem are part of the political discussion, and housing policies such as this are having an impact on development possibilities where the ageing population and their needs are seen as part of a broader consideration for society.

Various urban design and town planning concepts are also now having an impact. For example, the Walkshed[11] sophisticated web application enables users to explore the walkability heat maps of Philadelphia and New York City to establish personalised walkable zones within a mile of home (based on the concept of the watershed as a source of water) to encourage the development of neighbourhoods with services and facilities that could reasonably be reached on foot. Alongside the trend for mixed-use and flexible housing approaches, and downsizing, walkable neighbourhoods will improve and increase the living possibilities for all age groups, reducing reliance on cars and helping to build a local community.

Ageing is inevitable, so a population that lives longer is a positive prospect for all of us as individuals, and an achievement for society.

WOHA, Skyville@Dawson, Singapore, due for completion in 2015
The community spaces such as gardens and terraces are essential to the scheme.

Reinventing the City

Recycling spaces, places, buildings and materials helps to create flexible approaches to living in the city. However, sustainability is not just about materials or energy use; it also requires adaptable planning solutions. An example of 'recycling' housing in the UK is Park Hill in Sheffield, which has gone through many incarnations. The original brief was developed by Jack Lynn and Ivor Smith to accommodate multi-generational living, from a single pensioner to a young family. Built in 1961 as a single building of over 1,000 apartments that developed the 'streets in the sky' idea to replace the terraced streets of Victorian housing, it became dilapidated over time and required reinventing in terms of its layout, to a limited degree, but also in terms of the community mix.

The regenerated project has just been completed by architects Hawkins\Brown with Studio Egret West, who worked with developers Urban Splash to completely redesign and reinvent both building and community. Architecturally, it is considered an important reference of community housing. It has been reinvented by reconsidering not only the internal fit-out, but also its relationship to the external landscaped spaces. Community now exists in the streets in the sky, as well as in the gardens and redefined public spaces. The scheme was one of the projects shortlisted for the RIBA Stirling Prize in 2013.[12]

To respond to the challenges of our changing society, communities need to adapt, housing and urban design needs to be more flexible, and associated technologies need to offer systems that support people as they become more dependent. The solutions rely on the views and actions of policymakers, politicians, developers and investors, but also on scientists and engineers to develop technologies that can support independent living. Architects and urban designers also have a role to play in creating a vision for our changing societies that is proactive and not just reactive; however, they need to be aware of the issues around the sensitivity of the individuals who need to be housed, as well as financial drivers.

top: This affordable housing scheme, a series of stacked villages, consists of 960 homes.

bottom: Internal social spaces for people to meet encourage community interaction.

It is the responsibility of us all to contribute to solutions for an ageing population; the gift of old age is society's responsibility.

It is the responsibility of us all to contribute to solutions for an ageing population; the gift of old age is society's responsibility. We need housing and spaces that offer dignity as people age, in positive, interesting and appealing places to live and work. This is a message that is very much enforced by Baroness Greengross (pp 14–19) in her interview with Δ's Editor, Helen Castle. An influential campaigner for the aged, Greengross has played an instrumental part in changing age discrimination legislation in the UK, so that equality extends to not only services and facilities, but also the built environment.

This issue of Δ features a range of projects that consider exciting ways to adapt existing buildings in the city for new uses. Examples include the Age-Friendly Districts in New York City described by Jerry Maltz and his co-authors (pp 36–45), who also look at the establishment of Senior Centers and business hubs for the aged which are influencing and creating new building typologies and approaches to living in the US and Canada. The 'care' home is thus being challenged and redefined as an interdependent community.

The issue also illustrates a range of international cultural responses to the ageing population, for example from India (see Vaidya and Raje, pp 60–67), and China (Denison and Ren, pp 68–73), which are evolving economies and populations. In addition, Robert Schmidt III and Toru Eguchi (pp 74–9) and Sally Stewart (pp 80–87) consider compact and traditional living environments based on the cultural and traditional aspects of Japanese life. In Australia, Mark Taylor and Laurie Buys (pp 54–9) consider 'ageing in place', facilitating the community as it grows older, making homes accessible, and dealing with the familiar. In the

Hawkins\Brown, Park Hill, Sheffield, South Yorkshire, UK, 2012
Redeveloped by architects Hawkins\Brown, this iconic housing development was originally designed in 1961.

Interior of one of the refurbished apartments at Park Hill. The flexible, open-plan layout can be adapted to contemporary living.

Netherlands, Hans Becker's 'Humanitas care model' (pp 94–101) considers the issues of dignity and independence as individuals grow older. From her base in Copenhagen, Terri Peters describes how Denmark leads the way with a socially inclusive and innovative approach to designing for an ageing population (pp 46–53).

Various design competitions have encouraged creative ways to address housing an ageing population, and the issue includes an interesting proposal by Walter Menteth Architects (pp 102–7) for the RIBA Re-Imagine Ageing competition, sponsored by UK housing developer McCarthy & Stone, that focuses on community spaces as well as specialist housing solutions (pp 112–21).

To try to encourage some visionary thinking, an *D*-sponsored student competition for alternative ideas for housing as people age (see pp 126–35) was run in parallel with this publication. Here, a new generation of designers from international schools of architecture and interior design were invited to contribute ideas and thinking around the problem of adaptable housing. Solutions are for individual spaces, but also community proposals.

As the elderly population continues to grow, a new, international, multidisciplinary research field has emerged in practice and education. In this volume, for instance, Francesca Birks and Katherine Prater of Arup Foresight + Research + Innovation, Arup Group's specialist research unit and think-tank, explore what impact the confluence of climate change, urbanisation and the ageing

population might have globally (see pp 28–35). Richard Mazuch, Director of Design Research and Innovation at healthcare specialist IBI/Nightingale, highlights the potential of sense-sensitive design as supported by evidence-based research (see pp 108–11).

There are also now several universities and institutions in which architects are engaging on projects with sociologists, psychologists and urban planners. This is a collaborative approach that is advocated by the RMIT University Design Research Institute (DRI) in Melbourne, which annually invites researchers, students, designers and experts from industry, business and the community to form teams and generate innovative ideas around a particular set of issues; Katherine Wilkinson describes the research projects that were instigated by the 2012–13 Design Challenge on Ageing (see pp 122–5).

This emphasis on the interdisciplinary has the potential to encourage designers to work holistically not only with external experts, but also across conventional professional boundaries, such as interior design, architecture and urban planning, enabling the necessary changes and adaptations for demographic change in the 21st century. *D*

Notes
1. Office of National Statistics, 'Focus on Older People, Population Ageing in the United Kingdom and Europe', 2 March 2012: www.ons.gov.uk/ons/rel/mortality-ageing/focus-on-older-people/population-ageing-in-the-united-kingdom-and-europe/index.html.
2. Data from US Department of Health and Human Services, *National Vital Statistics Reports*, Vol 61, No 3, 2008: www.cdc.gov/nchs/data/nvsr/nvsr61/nvsr61_03.pdf.
3. Figures from the World Health Organization, 'The Health of Aging Populations in China and India', 2013: www.ncbi.nlm.nih.gov/pmc/articles/PMC3645349/.
4. F Sun, 'Ageing of the Population in China: Trends and Implications', *Asia-Pacific Population Journal*, 13, 1998, pp 75–92.
5. Ellen Dunham-Jones and June Williamson, *Retrofitting Suburbia: Urban Design Solutions for Redesigning Suburbs*, John Wiley & Sons (Hoboken, NJ), 2011. See also June Williamson, *Designing Suburban Futures: New Models from Build a Better Burb*, Island Press (Washington), 2013 p 38.
6. For information on the World Health Organization Global Network of Age-Friendly Cities and Communities see: www.who.int/ageing/age_friendly_cities_network/en/.
7. World Health Organization, *World Health Statistics 2011*: www.who.int/whosis/whostat/2011/en/.
8. 'Silver Linings: The Active Third Age and the City', RIBA Building Futures Committee, 22 October 2013. See pdf at: www.architecture.com/TheRIBA/AboutUs/InfluencingPolicy/BuildingFutures/silverlinings.aspx#.UmgFzlP47Dw.
9. See http://archives.hud.gov/funding/2008/ehif2008.cfm.
10. Alex Morton, 'Housing and Intergenerational Fairness', April 2013, p 12: www.policyexchange.org.uk/images/publications/housing%20and%20intergenerational%20fairness.pdf.
11. http://walkshed.org/.
12. http://ribastirlingprize.architecture.com/riba-stirling-shortlist-2013-park-hill-sheffield/.
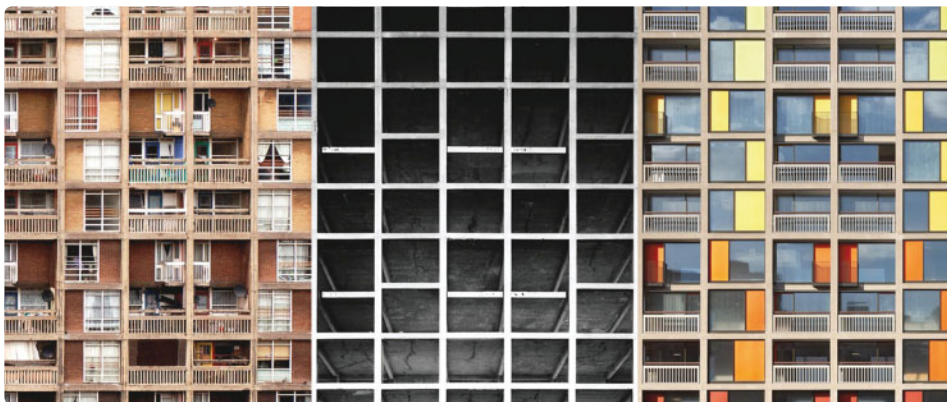
Facade of the Park Hill redevelopment, before, during and after refurbishment.

'REMEMBER WHO YOU ARE DESIGNING FOR'

AN INTERVIEW WITH BARONESS SALLY GREENGROSS OBE

Baroness Sally Greengross has a long and deep knowledge of issues surrounding ageing. Until 2000 she was Director General of Age Concern for 13 years, and also joint Chair of the Institute of Gerontology at King's College London and Secretary General of Eurolink Age. She is now President/Chief Executive of the International Longevity Centre-UK (ILC-UK), an influential think-tank impacting policy on longevity, ageing and population change. Since 2000, she has been a crossbench (independent) member of the House of Lords and she chairs five All-Party Parliamentary Groups: Dementia, Corporate Responsibility, Intergenerational Futures, Continence Care, and Ageing and Older People (Co-Chair). Here, the Editor of $\triangle$, **Helen Castle**, interviews her on shifting attitudes to ageing and the importance of designing for the older population.

Baroness Sally Greengross OBE, CEO of the International Longevity Centre-UK and a crossbench member of the House of Lords.

Sally Greengross first became involved with ageing over 35 years ago when in 1977 she was appointed an assistant director at Age Concern. Through her activities at Age Concern and now as CEO of the International Longevity Centre-UK and the ILC Global Alliance and as a member of the House of Lords in Parliament, she has become one of the most influential campaigners for the aged in the UK at a time of unprecedented demographic change: the generation that were born during the post-war spike in births are now at retirement age, and there is a strong awareness that in its wake there is to be an even wider bulge in the ageing population, with those born during the 1960s baby boom reaching their late 40s and early 50s.[1] One in six of people in England and Wales is now aged 65 and over; this is an increase of 900,000 just since 2001.[2] Greengross sums up the current situation as 'positive and scary'.

Campaigning for Change

The 'scary' or pressing nature of demographic transformation has meant that ageing has risen up the political agenda to 'positive' effect. When Greengross joined Age Concern at the end of the 1970s it was a relatively small organisation; it was transformed by the innovative programmes she initiated such as the Employment Forum on Age and the provision of financial services for older people, but perhaps most significantly through her unrelenting pursuit of political awareness. Age Concern was the first organisation to get a parliamentary office, and Greengross spent 27 years lobbying for the aged and attending annual party conferences. (Sitting in the House of Commons' canteen together for this interview during conference season, her relief at no longer having to be on the political trail is palpable.)

Political advancement has led to age discrimination legislation in the UK becoming more wide ranging than in the US. Even though the US has had legislation against age discrimination in the workplace since the 1960s, the UK now has laws on equality that extend to goods and services, facilities and the built environment. These should be better integrated by the implementation of the forthcoming Care and Support Bill, which Greengross has supported by sitting on the bill's Joint Pre-Legislation Scrutiny Committee. The intention is that it should bring together existing legislation around people's wellbeing, needs and goals.[3] She emphasises the importance of integration in services for the elderly whose illnesses cannot be singled out or boxed. An older person may be suffering from multiple conditions at any one time, such as dementia, arthritis and a broken leg. Her loyalty to issues surrounding ageing also means that she often gets involved with less appealing but no less important causes. She chairs committees, across the House of Commons and the Lords, on Dementia and Continence Care. As she says, she is prepared to take up what others won't!

One in six of people in England and Wales is now aged 65 and over; this is an increase of 900,000 just since 2001. Greengross sums up the current situation as 'positive and scary'.

PRP Architects, Pilgrim Gardens, Evington, Leicestershire, 2013
top, centre and bottom: A recipient of the HAPPI Project Award for the Housing Design Awards 2012, this close-care housing, managed by the Pilgrim's Friends Society, provides 31 'state-of-the-art' assisted living apartments. Supporting those with dementia, it avoids internal corridors. The use of colonnades and external walkways offer connection to the garden, aiding orientation.

PRP Architects, Plan of Rooftop Garden, James Terry Court, Croydon, 2013
above and top: Raised beds make plants viewable and reachable for wheelchair users and those who have difficulty bending.

Age-Friendly Living

Greengross is an advocate of providing suitable housing for people in their later years: accommodation that caters appropriately for different stages in life. For this reason, she is sceptical that 'ageing in place' is always the solution. She regards isolation as one of the greatest enemies of old age. It is a condition that the UK shares with the US, where older people have built-in barriers and do not want to be a burden to their family and friends. This is very different from Southern Europe where there is a much stronger sense of familial obligation and the climate lends itself more to social interaction. To remain healthy, older people must want to get up in the morning. They can only do this by regularly meeting others and being engaged in cultural and physical activities. There is a need to overcome the stigma attached to providing the right housing with the option of care built in, so that people can enter their later years able to draw on on-site extra support, close care and nursing provision when and if they require it. To be effective, though, this type of accommodation has to be promoted as a positive lifestyle choice.

Age-friendly communities also need to be designed to cater fully for the needs of those with dementia. As there have been gains in life expectancy, there have not particularly been the same gains in healthy life expectancy.[4] People can live a long time with dementia, and providing housing and external spaces that fully accommodate their needs greatly enriches their quality of life. Simple considerations like the placement of a flowering window box or a view of an attractive outside space can greatly enhance day-to-day living. Those with dementia also have a tendency to wander, which needs to be catered for. In Australia, the use of circular walking routes were pioneered that enable occupants to wander in safety and return to where they started. In addition to specially designed paths, gardens can be further enhanced by sensory planting to evoke memories, and areas with shaded and sheltered seating also included in the design.[5]

[Isolation] is a condition that the UK shares with the US, where older people have built-in barriers and do not want to be a burden to their family and friends.

The rooftop garden of this nursing home is organised around a central circular walking route, which returns residents to the point from which they started.

Sensory planting as advocated by PRP Architects
Plants for the landscaping of outside spaces can be chosen for their high colour or textural 'contrast' to aid those with poor vision. Strongly scented plants, such as lavender, also help to evoke memories and can be strategically placed along footpaths to release fragrance when residents pass.

Designing for the Whole Population

Providing for the elderly extends far beyond housing for the most vulnerable and into the wider built and urban environment, enabling active agers to get around and live independently. For example, cobbles are not suitable for those who are less stable on their feet, and pavements should be level and well maintained. Pavements and roads also need to be adapted so that crossings are timed to take into account slower rates of mobility. Buses need to bend over to let people in. Signage needs to consider impaired vision, and there needs to be better lighting for security and visibility.

Appropriate design in the urban environment is being spearheaded by the World Health Organization's Age-Friendly Cities and Communities programme, which through a consultation project with 33 cities in 22 countries has produced a checklist of age-friendly features.[6] This care in how the environment is designed is not a matter of catering to a minority group, but, as Greengross states, a matter of 'remembering who the population are'. What works for older people also often works for mums. For Greengross, Queen's Park in Northwest London, maintained by the City of London Corporation, is a prime example of a lively park that has become a magnet for all generations. There are a successful cafe, children's playground and sand pit, bandstand, pet's corner, pitch-and-putt course, pétanque, tennis courts and plenty of seating for older people.

In line with this, newly built public buildings and housing should be designed for the whole population rather than just the first-time buyer. There should be plenty of natural and artificial light internally for visibility, and switches and sockets should be reachable from wheelchairs. Cupboard doors also need to be positioned so as to be accessible for those who find it difficult to reach down and those with poorer eyesight. Stairs and doors should be wide enough for everyone as the whole of the population becomes broader and heavier. The impact of not fully considering people's needs can have a disastrous impact on individual lives. Greengross gives the example of the practice many years ago of enveloping terraces in Wales, which joined existing housing stock together to create housing for the elderly without effectively adapting it. The steep narrow staircases meant larger and less mobile occupants who had accommodation upstairs became imprisoned in their rooms.

Appropriate design in the urban environment is being spearheaded by the World Health Organization's Age-Friendly Cities and Communities programme, which through a consultation project with 33 cities in 22 countries has produced a checklist of age-friendly features.

Queen's Park, Northwest London
above and right: The 12-hectare (30-acre) park founded in 1887 provides green space and leisure facilities for all generations in one of the capital's most densely populated areas.

Innovation as a Tool

Opportunities for design extend beyond physical space. Technology can be enormously beneficial for an ageing population, especially in the battle against social isolation. It can bring friends and family closer, regardless of distance. An elderly gentleman that Greengross knows, now in his early 90s, gets up every day at 6am for a swim and then returns home to have breakfast with his grandchildren over Skype. To appropriately apply new technologies and innovative thinking, designers need to be able to tap into professional expertise in healthcare and geriatric services. In August 2011, Greengross with the Design Council launched a 12-month national design challenge in partnership with the Department of Health, which brought together designers, innovators, service providers and health experts to create products and services as real initiatives for those with dementia. The five innovative solutions that were developed included: Buddiband, a wristband personal alarm that alerts support services when needed; Grouple and Trading Times, two online/social media services that helped to support carers; Dementia Dog, a service providing assistance dogs to people with dementia; and Ode, a fragrance-release system designed to stimulate appetite among people with dementia. [7]

Greengross's knowledge of designing for the older population is informed by the real needs of the ageing. It is gleaned through many years of working in the sector talking to those on the front line: support groups, carers and the vulnerable elderly. There is no single solution in terms of housing and the wider built environment. Designers, as she states, need to 'remember who they are designing for'. Design must be inclusive to cater for the needs of the whole population that is getting proportionately older, but it also needs to get cannier and more innovative in the way that it aids those who in the last years of their lives require specialist care in order that they may also live actively, comfortably and with dignity. ◬

This article is based on an interview with Baroness Greengross at the House of Lords on 11 September 2013.

The Dementia Dog, assistance dog for the mind, one of five innovative solutions to help people with dementia live well, 2012
below: This overall initiative to develop innovative solutions with multidisciplinary teams was developed by the Design Council in partnership with the Department of Health. The Dementia Dog was brought together by a team from Dogs for the Disabled, Alzheimer Scotland and the Glasgow School of Art. The provision of an assistance dog counters the disruption of dementia by prompting its owner to stick to a consistent living routine, enabling the person suffering from dementia to eat, drink and sleep at set times.

Notes
1. See 'Ageing, Longevity and Demographic Change: A Factpack of Statistics from the International Longevity Centre-UK, July 2013', p 3: http://www.ilc.org.uk/.
2. Ibid, p 2.
3. At the time of writing in October 2013, the Care and Support Bill is being reviewed in the House of Lords.
4. 'Ageing, Longevity and Demographic Change', op cit, p 5.
5. 'Housing LIN Factsheet 35: Landscape Design for Dementia Care', written by Tom Delhanty, Associate Director at PRP Architects and published by the Housing Learning & Improvement Network, July 2013: www.housinglin.org.uk/_library/Resources/Housing/Support_materials/Factsheets/HLIN_Factsheet35_Landscape.pdf.
6. For the World Health Organization's Age-Friendly Cities Checklist see: www.who.int/ageing/publications/Age_friendly_cities_checklist.pdf.
7. www.designcouncil.org.uk/our-work/challenges/Health/Living-well-with-Dementia1/Solutions1/.

Grouple, collaborative caring, one of five innovative solutions to help people with dementia live well, 2012
left: Also part of the Design Council initiative, this scheme highlights the potential of new technologies to enhance the lives of those with dementia and their carers. This secure, private online social network, developed by design consultancy Studiohead with the aid of a technologist, media artist and social innovator, helps people share the responsibilities of caring for someone with dementia.

'NEW AGING' DESIGNING ARCHITECTURE FOR ALL AGES

The US is on the brink of demographic transformation, with the bulging generation of baby boomers about to reach retirement. In 2008, New York-based architects Hollwich Kushner (HWKN) anticipated this shift by instigating a 'New Aging' initiative that set out to explore imaginative solutions in architecture and urbanism to age-related challenges. Here **Matthias Hollwich with Matthew Hoffman** of HWKN explain why attitudes and approaches to ageing have to change; and why old age needs to be 'acknowledged as a state of human existence' that fully 'deserves preparation, anticipation and excitement'.

Matthias Hollwich & Matthew Hoffman

Hollwich Kushner (HWKN), Boom Palm Springs, Palm Springs, California, 2011
The nursing home at Boom is an iconic building located at the centre of the community that has only a minimal amount of beds for residents to use when they require intensive care.

Let's face it – we do not need special architecture for old people, we need the right architecture for all ages. The problem with designing environments specifically for older people is that nobody wants to move into them: they are the last resort, not the first choice. Today's nursing homes and retirement villages masquerade as 'homey' environments, but these antiquated models are rapidly becoming unacceptable. The 'baby boom' generation who questioned various aspects of society in the 1960s are not prepared to 'age gracefully' by being assigned to unappealing and isolated homes for the 'elderly'. For many people, an old person's home has the same dread as the workhouse in the 19th century – it is the last place that one would want to end up.

The 'elderly' is not a single group of individuals, but a multitude, and we therefore required a wide range of solutions.

Nations around the world are scrambling to prepare for the surge of ageing baby boomers. According to the Federal Administration on Aging, in the US alone the number of people who are 65 and older will double between 2000 and 2030.[1] Disparate parties such as lawmakers, corporations and city planners all have a stake in figuring out the economic impact of a large workforce entering retirement, the toll this population will take on national healthcare systems, and the urban question of how best to house and care for society's older members. These unprecedented social issues call for a change in attitudes related to ageing. Traditional approaches to ageing have not gone far enough to ensure a happy and healthy life for all. It is obvious that we need to start looking at ageing in a whole new light.

In 2008, Hollwich Kushner (HWKN) embarked on a project, New Aging, to investigate and apply advances in architecture and urbanism to age-related challenges, and to find solutions that assure the ideal utilisation with the utmost dignity for age. We learned a lot in the process. One thing we came to find out is that while some people try to prepare for retirement financially, almost everyone lives in denial about the physical and social challenges that come with growing old. What really makes the difference when it comes to ending up in a nursing home or living a self-determined life in its entirety is careful long-term planning, which can only happen when ageing is acknowledged as a state of human existence, and as such deserves preparation, anticipation and excitement.

Hollwich Kushner (HWKN), Aging in Africa, Lagoon Aby, Ivory Coast, 2009
Aging in Africa is a masterplan for a group of retired priests in the Ivory Coast that finds inspiration in local planning and construction techniques to create a social engine for residents and neighbours.

DEVELOPING THE 'NEW AGING' MODEL

Our work at HWKN began with the assumption that it was time for a radical re-envisioning of the way we live at a later age. We concentrated our research on the baby boom generation, who we came to define as 'mavericks'. Reinventing design for ageing with a community that had invented itself made perfect sense. The boomer community is not satisfied with the traditional design of, say, the typical desert golf complex. They are determined to live only in a community whose design is in sync with their sophisticated, active lifestyles. As architects we must foster the idea that residents can and should continue living their lives to the fullest, in the same fashion that they always have.

We thus asked ourselves: how can architecture, and our environment, create a positive impact for individuals and for communities? We discovered that a successful community needs to be multi-generational at its core. Older residents want to live near their more youthful counterparts. So, rather than focus on residents exclusively in the 65+ age bracket, our designs are intended to appeal to residents of all ages, including children. In this way, New Aging imaginatively embraces the philosophy of 'ageing in place', where the focus is on a rich and active life rather than on retirement and withdrawal. The natural liveliness that comes from a multi-generational community extends to an attitude of caring for all.

However, we could not embark on this exploration alone: we needed help. The 'elderly' is not a single group of individuals, but a multitude, and we therefore required a wide range of solutions. We invited architects from around the world to pitch in and design physical manifestations of their own beliefs on ageing, lifestyle and architecture. We had a rule for those who wanted to join us: that they had never before designed an age-related project. It was important to find teams that would explore their own unique solutions while avoiding influence from the mores of existing architecture for the ageing population. We partnered with firms across the globe, including: J Mayer H, Diller Scofidio + Renfro, LOT-EK, Arakawa + Gins and countless others. And we did not stop at architects; we also collaborated with historians, politicians, entertainers and artists to add to the diverse voice of the New Aging project.

above: A series of public buildings forms the spine of the community, with rings of housing around the perimeter.

top: The priests worked directly with the townspeople to reach an agreement whereby the priests were given free land to build their village in exchange for them starting a school for local children.

Each floor of the shared housing units holds a studio unit, and the top floor is reserved as a community space for the residents to share.

Four core values were eventually defined that, when combined, can create environments for meaningful living: individuals need to be embedded within a social engine, have direct access to goods and services, and rely on a secure future, all within a highly designed environment that enhances day-to-day living and also attracts outsiders into the community.

Kick-Starting Social Engines

Human beings are social creatures. There are many problems related to loneliness and ageing, and breaking such isolation patterns helps to ensure a socially satisfactory life. A simple interaction can go a long way in improving overall health, and this becomes powerfully relevant at a later age. In order to actively define our own lives, we must create and re-create dynamic environments in direct relation to our needs within a larger (continuously changing) social network. As architects there are simple tweaks and reconfigurations we can make that go a long way to encourage interaction. There is a wealth of hidden potential within existing typologies, and it is our job to discover and empower those moments. For example, at HWKN we experimented with a shared housing typology, which is perfect for older people who are not part of a typical family structure but might want to move into a home with a few friends. Instead of a normative arrangement with a master bedroom and smaller bedrooms, we made every bedroom a master bedroom. This created a dorm-like

....

Hollwich Kushner (HWKN), Boom Costa del Sol, Malaga, Spain, 2011
Boom Costa del Sol is based on a gridded masterplan in which 10 different architects designed unique homes for living and ageing.

setup where each person had their own private space to retreat to whenever they wanted, and a big communal space with a large kitchen, dining and living room to share.

Part of this expanded direction was a reaction to the property crash of 2008, which left a swath of vacant properties of all shapes and sizes across the US. This raised questions such as: 'How do we create a viable community in a vacant strip mall north of Miami,' or 'How do we create a retirement village in an empty mid-rise in Vegas?' Adapting the New Aging values accordingly, we invented new techniques, as social condensers, to examine the hidden potential of these existing typologies by inserting catalysts for community formation. One of the prototypes we tested, the Boom Tower, uses a very simple programmatic move to re-envision the typical high-rise residential model by turning the building upside down, moving all of the public programmes to the top. This simple approach means the top of the building is no longer reserved for penthouses that only a few can enjoy, but part of a larger social mission to create a space that the whole community can enjoy together.

Socialising can be encouraged through new living arrangements such as the above, but it is also important to consider shared amenities. A wide range of amenities can create a strong sense of community by providing for meaningful activities, triggering healthy living and enhanced social engagement. A further benefit is that they draw in outsiders, which constantly reinvigorates the community.

Access to Goods and Services

While it is convenient to hop into a car and go shopping, if necessary every day it can become a waste of energy and a drain on finances. Also, above the age of 75 driving becomes much more challenging, and there is a dramatic increase in the amount of traffic-related fatalities among this group.[2] Access to local stores, either through public transport or, even better, on foot, is essential for the elderly to maintain their independence. Within HWKN's projects, we have either built within highly liveable urban environments, or created pedestrian-centric masterplans that include all of the necessary amenities to ensure residents can easily age in place without ever being forced to move out.

In the Geropolis project, in collaboration with the Bauhaus Foundation in Dessau, HWKN explored methods to create self-sustaining social engines through give-and-take relationships between neighbours. Here, services are provided in a grass-roots system based on real-time needs and face-to-face interaction. The best kind of help eases the way without replacing the capabilities residents still have. It can be delivered through hired service providers, strategic alliances, supportive friends and innovative technology, and does not necessarily have to be limited to older people. One of the largest problems with service providers is that they tend to operate like a light switch: either on or off. In many cases, an older person is still quite capable and needs just a little extra help and encouragement. A social-based system

In order to actively define our own lives, we must create and re-create dynamic environments in direct relation to our needs within a larger (continuously changing) social network.

Hollwich Kushner (HWKN), Boom Palm Springs, Palm Springs, California, 2011
left: The housing cluster designed by Hollwich Kushner creates a central courtyard that each of the units faces into, with the whole united by an elevated running track.

right: At the heart of Boom Palm Springs is a large plaza for socialising and relaxing, surrounded by a hotel, a business centre, gym and spa, and a cafe, all designed by different architects.

is able to employ more sensitivity to these issues, so that a helping hand is offered while still empowering older people to use and preserve the skills they still have that in turn increase their independence.

The Internet and new digital tools have also opened up a whole new realm of convenience. The new online version of Meals On Wheels is seamless, Craigslist has unlocked new potential for a whole range of personal services, and Zipcar has introduced a sharing platform that is cheaper and easier to maintain than owning a car. An added benefit of such services is that they help to create new relationships, with each other and with the things around us because the majority are based on social exchange systems. The online, location-specific service revolution is just beginning.

Security for All

Houses and apartments can offer more than shelter from the elements; they can be enriched and reconfigured to be more personal, flexible and liveable. In HWKN's projects, special attention is given to creating spaces that focus on longevity and built-in age security. As we age, we may encounter physical, financial or social deficits. By creating architecture based on universal design and sustainability principles that is programmatically arranged to encourage interaction, it is possible to create a backbone that supports us when we need it the most.

Hollwich Kushner (HWKN), Max, New York, 2012
top: The apartments at Max are highly flexible prefab units with an array of collapsible furnishings.

centre: Max is topped with a planted hat that screens mechanical space and houses an array of community amenities including a gym, spa, shared dining room and kitchen, and shared workspace for all residents.
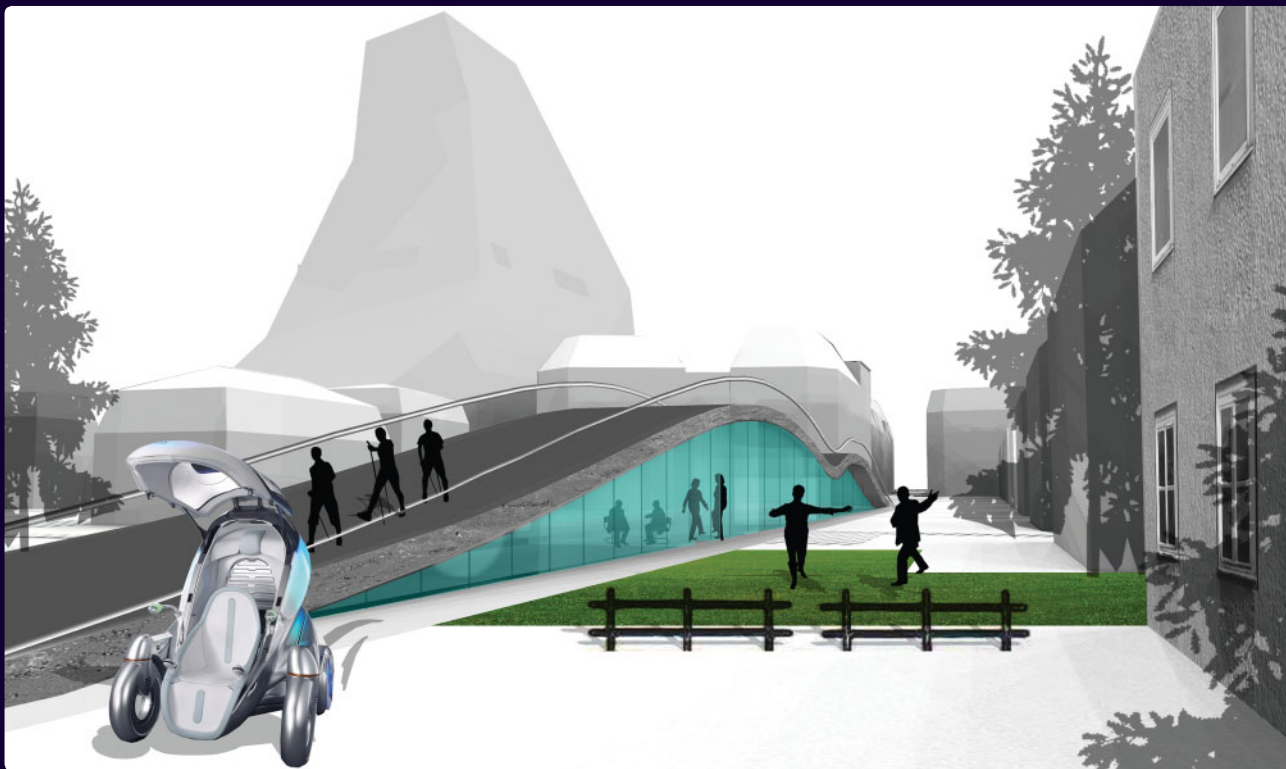
Matthias Hollwich and the Bauhaus Dessau Foundation, Geropolis, Prototype, 2003
above: Geropolis investigates the impact of ageing on our environment, and proposes a series of intelligent solutions that can be inserted into the existing fabric of our cities as direct benefits not only for older people, but for everyone.

A key example of this is a concept that we have developed at HWKN called 'Stealthcare', which has been employed in all of our ageing projects to create home nursing services that operate as invisibly as infrastructure – they are there when you need them, and disappear when you don't. Dimensions within the home need to be calibrated so that it is possible to fit a medical bed into a bedroom, and turn the bedroom into the primary living room, to ensure that a person can remain within their home even as they become more physically or mentally frail. Alternatively, if they become obsolete as the person recovers, they can be stowed away.

Advances in technology over the past few years mean that devices such as smart phones are now at the point where they can truly enhance our lives. Many service areas that were traditionally handled in person, privately, and at great cost, are now available online, or as a digital app, for free. Users can explore the full range of available services, from calendars that manage appointments, to food delivery apps, to video chats that let us talk to anyone in the world, face to face. Any smart phone can command the domestic realm through home-control apps; via one centralised program they can manage temperature, lighting, security and entertainment systems to create an environment truly in tune with users' needs. Energy usage can also be tracked to enable smarter decisions to be made regarding utilities. The all-in-one interface allows elderly or immobile users to navigate the home without getting up.

Architecture as an Attractor

By making architecture for the elderly desirable, it is possible to shift negative public perceptions of ageing and fight age discrimination. As we age it becomes harder to move about or travel, and an appealing, well-designed home environment in an easily accessible neighbourhood with good and interesting amenities for all – guest suites, entertainment, a swimming pool, Wi-Fi – is more likely to encourage friends and family to visit and spend more time with us.

Certain medical conditions require special environments, and instead of relying on the decorated shed model of today, a similar level of design can be exercised for nursing homes and assisted living facilities.

THE 'NEW AGING' MISSION

Ageing is like a trip around the world, and must be planned for in the same fashion, in terms of budget, accommodation, transportation and experiences. Both external and personal conditions need to be taken into account to craft the right plan, for the right time, the right location and the right lifestyle. In a society that is increasingly getting older, there is an opportunity for architecture to get back in the driver's seat by enhancing social interaction between people, not only for older generations, but for the benefit of all age groups. Could we now be arriving at the moment when architecture plays a key role in supporting the next societal revolution – the Ageing Revolution? ∆

Notes
1. Administration on Aging, 'Projected Future Growth of the Older Population', Department of Health and Human Services, 2012: www.aoa.gov/Aging_Statistics/future_growth/future_growth.aspx#aging.
2. National Highway Traffic Safety Administration, 'Traffic Safety Facts 1997: Older Population': www-nrd.nhtsa.dot.gov/Pubs/97OlderPop.pdf.

Hollwich Kushner (HWKN), Max, New York, 2012
Max is designed to be a community asset, careful not to turn its back on its surrounding neighbours and instead turn a warm eye to the public space around it.

At the very top of the building, in the amenities space, the entire floor plate is given over to community uses such as a gym, hot tub and climbing wall.

ADAPTING TO GLOBAL CHANGE

Hurricane Sandy blackout, Lower Manhattan, New York, 2012
Lower Manhattan experienced severe power outages caused by Hurricane Sandy, leaving many older residents without medical essentials, and making evacuation and transportation more difficult.

AGEING, URBANISATION AND RESILIENCE

Francesca Birks &
Katherine Prater

With climate change, natural disasters such as hurricanes, earthquakes and tsunamis are occurring worldwide with greater frequency. This is at a time when an expanding older population is living in cities, where it is proving one of the most vulnerable groups when a crisis hits, from evacuation to recovery. Here, **Francesca Birks and Katherine Prater** of Arup Foresight + Research + Innovation consider design solutions that enable the liveability of cities for ageing residents in periods of disaster, as well as stability.

Between 22 and 31 October 2012, Hurricane Sandy swept through the Caribbean and across the eastern coasts of the US and Canada. The preparedness for, response to and recovery from Sandy varied greatly at the national level, as well as at the levels of individual neighbourhoods and communities. What remained consistent between the affected areas was that the poor, elderly, disabled, and otherwise marginalised groups (often with overlapping constituencies) were most vulnerable at each stage of the disaster, from evacuation to recovery. In the northeastern US, 80 per cent of the fatalities caused by Hurricane Sandy were residents over 45 years old, and nearly 50 per cent were older than 65.[1] Low-income residents faced similarly severe impacts from the storm: approximately 68 per cent of renters in New York and New Jersey making claims to the Federal Emergency Management Agency (FEMA) had annual incomes of less than US$30,000 per year.[2]

Climate change, urbanisation, and the ageing of the global population have each become topics of pervasive research in recent years. For the first time in 2008, more than half of the global population lived in towns and cities,[3] and the first half of 2011 was the costliest six-month period in the history of the insurance market due to natural disasters in Australia, New Zealand, Japan and the US.[4] The United Nations (UN) anticipates that 2015 will mark the first time in recorded history in which the world's over-65 population will outnumber those younger than five.[5] Factors such as informal urbanisation in developing nations, rising middle classes in industrial economies, and the correlation between ageing and poverty require recognition of the interdependencies between climate change, urbanisation and ageing when designing inclusive and resilient cities. This article examines design solutions appropriate for the older population by considering the impacts of climate change on the lived experience of ageing urban dwellers.
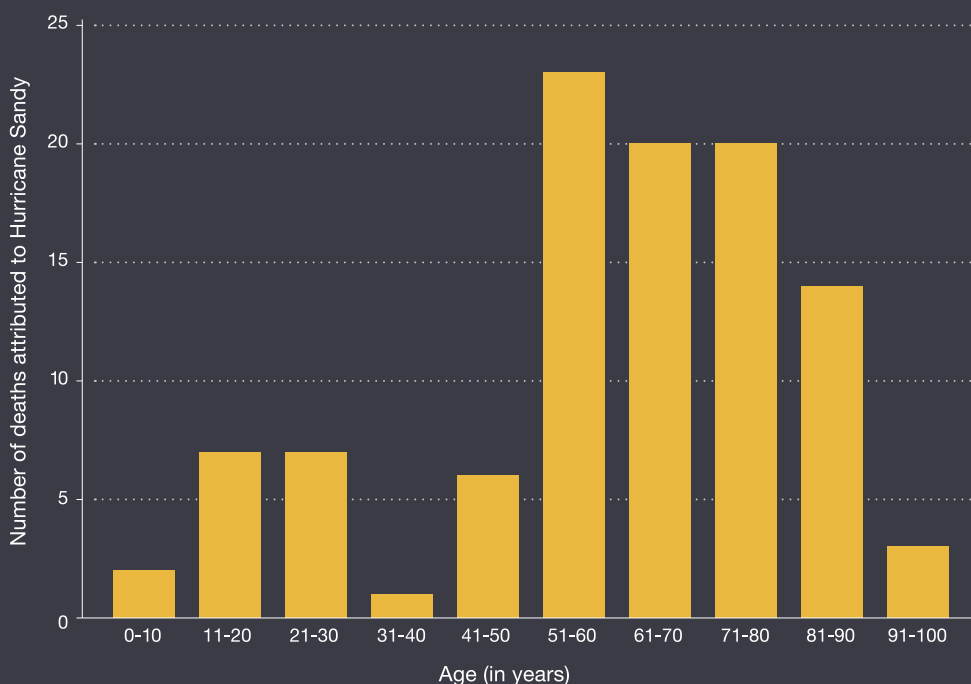
Hurricane Sandy fatalities, 2012
Graph of deaths attributed to Hurricane Sandy by age in the greater New York/New Jersey area. Data from 'Mapping Hurricane Sandy's Deadly Toll', *New York Times*, 17 November 2012: www.nytimes.com/interactive/2012/11/17/nyregion/hurricane-sandy-map.html?_r=0.

The global proportion of older persons is rising at an increasingly rapid rate. The UN reports that older persons aged 60 years and over represented 8 per cent of the global population in 1950, 10 per cent in 2005, and are projected to reach 22 per cent by 2060.[6] The liveability of cities in times of disaster as well as peace must be reconsidered to meet the present and future needs of ageing residents.

The majority of this rise in ageing populations, as reported by the World Health Organization (WHO), will take place in developing nations.[7] This fact is indicative of an increase in longevity within emerging industrial economies, due in large part to shifting patterns of individual wealth. By 2050, the UN projects that approximately 25 per cent of urban dwellers in emerging economies will be over the age of 60.[8] Countries such as China and Brazil are expected to experience age-related shifts in population structure over the next 25 years comparable to those witnessed by countries such as France and the US over the course of more than 100 years.[9] This co-occurrence of industrialisation and ageing poses significant challenges for the adaptation of urban infrastructure to accommodate new needs. However, the relative nimbleness of infrastructure in developing nations in certain contexts presents opportunities to 'leapfrog' over, or advance beyond, countries with more established infrastructure and urban design conditions.[10] Municipalities that are able to integrate the needs of the elderly into the flows of goods, services and people throughout their cities are better positioned to make design decisions that can endure a rapidly changing demography.

Urbanisation impacts on ageing populations at every level. At the city and inter-city scales, viable transportation options are critical for ensuring that the elderly have access to essential social, medical and retail destinations. Co-location of common necessities, such as senior housing, doctors' surgeries, pharmacies and grocery stores may make independence in this respect more achievable for older persons. At the neighbourhood level, cultivating familiarity, pedestrian safety and social engagement are important components for inclusive design. Easily navigable pavements and street crossings with even surfaces, as well as ample open space, accessible public toilets, street lighting and adequate seating areas promote active and connected lifestyles for residents of all ages. Age-friendly design solutions at the building level promote independence and mobility, and include features such as wider and more accessible hallways, ramps and stairwells, non-slip floor surfaces, ergonomic levers and switches, and clear directional signage and floor plans that enable easy circulation.

It is important, however, to acknowledge that designing for an ageing population is context-specific. As with any other demographic, the needs and expectations of older persons vary widely depending on culture and environmental conditions. The elderly in cities such as Mumbai or Shanghai may expect to live with extended family, whereas residents of cities such as Tampa, Florida, may relocate to retirement communities away from their families to meet their needs in the later years of their lives. Among urban environments, methods for achieving accessibility and comfort must be considered at the local, cultural level. For example, the UN estimates that approximately half of all urban-dwellers live in small settlements with fewer than 500,000 inhabitants.[11] This fact dismantles the common misconception that urban density is found only in large cities, and foregrounds the need to seek tailored solutions to planning and mobility issues to suit ageing populations in a diverse range of urban environments.

Municipal authorities are growing increasingly aware of the need to design for a diverse range of needs; however, even the most age-friendly design solutions must also be considered through the lens of resiliency to climate change. The impacts of climate change are generally felt in 'peaks' caused by rare emergency situations that require immediate disaster response or evacuation, and 'plateaus' – the long-term resilience of a city, where symptoms of climate change such as seasonal weather and resource scarcity must be dealt with on an ongoing basis. The manifestations of climate change can take many forms, including hurricanes, floods, tornados, earthquakes and extreme heatwaves and cold waves.[12] The 2010 earthquake in Haiti and the 2011 tsunami and earthquake in Japan illustrate the intersecting need for resilient infrastructure during the peaks of natural disasters and the plateaus between such events. Though emergency responses to each of these different events vary, many of the design solutions, such as accessible evacuation routes and clear signage and communication, remain largely the same.

The 2010 earthquake in Haiti and the 2011 tsunami and earthquake in Japan illustrate the intersecting need for resilient infrastructure during the peaks of natural disasters and the plateaus between such events.

Suining, Sichuan Province, China, 2007
Elderly residents rest and socialise, making the most of the city's accessible, public open spaces.

Disaster Preparedness and Response

Growing older does not directly make a person more vulnerable to the challenges of urban living or the short- and longer-term effects of climate change. However, many elderly residents of urban areas are particularly susceptible to the threats posed by emergency situations due to the correlation between ageing and conditions such as impaired mobility, sensory awareness, cognitive acuity and financial stability.[13] Furthermore, progress in managed care has enabled a growing proportion of older residents to receive medical services at home rather than in hospitals and nursing homes, and their increasingly dispersed nature poses challenges for medical and rescue workers to locate, communicate with, and care for a city's elderly population before, during, and after a disaster.[14]

Many of the needs of older persons, as well as other demographic groups, are exacerbated in times of extreme emergency conditions. The Russian heatwave of 2010 was the cause of the nation's highest temperatures on record[15] and the most significant drought in several decades.[16] Scientists attribute the heatwave to climate warming with 80 per cent probability.[17] The consequences were as varied as forest fires, heat stroke and crop failures, with direct and indirect complications for older residents of many cities in Russia and Eastern Europe. Often with less ability to regulate internal temperatures, heat exhaustion and respiratory conditions posed a serious threat to the elderly. Ageing residents living in older buildings without air conditioning and adequate ventilation were particularly at risk, and were also more limited by mobility than the younger population in seeking relief through evacuation.

The willingness and ability of many older residents to evacuate during natural disasters is critically influenced by medical needs. Life-support equipment, such as oxygen generators and respirators, as well as hearing and visual aids,

monitoring devices, electric wheelchairs, and foods and medications reliant on refrigeration are all examples of the dependencies that older people may have on electricity and specific equipment located within their homes that is difficult or impossible to relocate in times of emergency. Disaster response for many elderly persons is a two-way flow, requiring the elderly to leave their homes for evacuation or to obtain supplies and services, and new or established care providers to meet these needs at their home. Safe movement in both directions can be encouraged by the provision of amenities at the neighbourhood and city scales, such as resting places, navigable and accessible transport, and clear communication of emergency relief plans before and during the disaster.

In the case of residents for whom evacuation is a physical possibility, unease may stem from less obvious drivers. For example, many older persons are reluctant to leave their homes due to the comfort and familiarity with their home and neighbourhood that has been cultivated over many years. Uncertainty about being able to access the same amenities, as well as losing connection with social groups and the stability of routine events and services, can all impact on the feasibility of evacuation in emergency situations.

The below looks at a range of design possibilities to enable disaster response and reduce the vulnerability of the elderly.

Design Solutions for Disaster Preparedness and Response
Clear signage
Accessible transportation
Disaster relief hubs
Well-lit and safe green spaces
Age-friendly pavement and walkways
Access to public toilets
Ample outdoor resting areas

Design Solutions for Disaster Preparedness and Response

During times of disaster response, as well as in everyday life, clear signage promotes effective and independent navigation of space. Circulation paths, location of amenities and evacuation routes must foremost be logically designed, and be displayed in accessible locations. Opportunities exist to clarify routes of travel beyond the home and office building. Paddington Station, London, incorporates directional signage onto the floor of the train terminal to inform passengers of the location of their connections and to ease the flow of traffic in the crowded main hall. San Francisco has recently augmented its system of painted cycle lanes to include common routes through the city; the paths serve the dual purpose of making cyclists aware of the safest route, as well as allowing drivers to anticipate the turns and crossings of nearby cyclists. Critical components of clear signage for the elderly are the delivery of information in plain language, and in multiple formats such as print, Web and audio.

Heatwave, Moscow, Russia, 2010
above: The Russian heatwave in 2010 resulted in forest fires that destroyed villages surrounding Moscow and caused a severe decline in air quality in the region. Groups such as the elderly and the ill were particularly susceptible to the impacts of the disaster.

Design solutions for disaster preparedness and response
right: Ensuring preparedness and adequate response to disasters involves a combination of infrastructural measures, such as accessible transportation and social connectivity to confirm that all residents are aware and equipped in times of crisis.

Ability to access and navigate transportation during a disaster is fundamental to the safety of older residents. As was experienced during Hurricane Sandy, exceptional strain can be placed on certain modes of transport as flooding or other natural disasters cause systems to fail, underlining the need for the provision of, and increased familiarity with, especially for older persons, multiple options in the event that their typical mode of transport is inaccessible.

Transportation must be affordable, reliable, and serve destinations that the elderly population need to travel to. For public transport, the stops and stations, as well as the vehicles themselves, should be designed with accessible and comfortable priority seating for seniors. Ticketing and other activities that require queues should be equipped with 'fast track' lanes for the elderly and those who have trouble standing for extended periods.[18] Some cities and communities worldwide are even starting to implement senior-specific transport options, such as shuttle services between senior residences, grocery stores and health centres. The limited mobility of many older persons must be considered when designing and locating public transport stations and parking, as well as street crossings and pavements. Areas with clear delineation between transport types, such as a curb with visual markings as well as a textured surface, ensure that safety information is communicated to those with different needs.

In emergency situations, residents require the provision of information in addition to physical resources. It is important that information is communicated through multiple channels to ensure that messages are heard by all. Locations for disaster relief, including food, rest and medical services, should be communicated to the elderly far in advance. Using community buildings such as libraries or schools as hubs for disaster relief allows the elderly to come to a place with which they may already be familiar, encouraging them to evacuate their homes when necessary.

Long-Term Resilience

Designing to mitigate climate change in the long term is an endeavour that requires the input of a wide range of sectors. Population growth and resource consumption, among other issues, cannot be undertaken by the design community alone. However, sustainable design of buildings, systems and cities, as well as design for social integration and collaborative

consumption, can offer solutions for a way of living that supports a broader movement away from climate change.

Solutions for preparing ageing populations for resilience against climate change couple awareness of consumption with the goal of promoting a seamless transition from one life stage to another. Below is a selection of design examples that promote social and physical connections to maintain a structure of support for the elderly during both the peaks and plateaus of climate change.

Design Solutions for Long-Term Resilience
Designing for connectivity
Ageing in place
New residential models
Centralised housing and amenities
Co-location of common necessities (doctors, pharmacies, grocery stores)
Convenient and comfortable public transport

Design Solutions for Long-Term Resilience

Social and physical resiliency stem in large part from knowing one's neighbours. In case of emergency evacuation, being familiar with the needs of older people in one's apartment building can make the difference between safety and vulnerability. Indoor and outdoor spaces should be designed to enable this degree of connectivity. Circulation routes, as well as shared amenities such as sitting and laundry areas, or post collection, can be foregrounded in the design of apartment buildings to facilitate increased intergenerational interaction among residents. The design of community spaces with potential for multiple usages, such as schools that can also be used as centres for civic engagement or exercise classes in the evenings, serves the dual purpose of maximising utilisation of existing spaces and fostering connectivity between traditionally disconnected populations within the community. Accessible outdoor spaces, including resting places, safe pavements and crossings with even surfaces, clean and age-friendly public toilets, and walking paths clear of cyclists, are all solutions for promoting familiarity and connectivity at the neighbourhood level.[19]

New York is championing efforts to promote age-friendly liveability, the importance of which was emphasised in the wake of Hurricane Sandy. The city expects its over-60 population to increase by 50 per cent over the next 20 years, and has responded by organising a variety of initiatives including training age-friendly ambassadors and identifying ageing improvement districts. It has developed 59 specific initiatives under the programme Age Friendly NYC: Enhancing Our City's Livability for Older New Yorkers. Examples include the redevelopment of pedestrian street crossings to promote safety and comfort for older residents, a taxi voucher programme for residents unable to make use of public transport, and targeted support for the creation of low-income housing for older residents.[20]

A large threat to the wellbeing of many elderly people is social isolation later in life. As mobility and related health considerations become a larger factor in their daily experience, engaging in activities beyond the necessary is a more substantial challenge for older residents. Locating senior housing in central, mixed-use areas can help reverse isolation while also making it easier for the elderly to attend medical appointments, do their shopping and so on. Conscious planning of urban areas to co-locate housing with typically required amenities and necessary transport options benefits not only the elderly living in the city centre, but all who live in and visit the area. Centralising senior housing also requires awareness of a variety of design challenges, including noise, safety and comfort. Clear, well-lit routes and dedicated walking paths between common destinations, as well as architectural solutions such as central courtyards and internally oriented bedrooms, all contribute to the safety and comfort of urban living.

Zurich has been a long-time exemplar of centrally located senior housing with accessible amenities and transport. The Hunziker project in North Zurich broke ground in 2012, designed as a large-scale, mixed-use urban development located on a former industrial site.[21] The neighbourhood will accommodate living and working space for 1,100 people, with traditional apartments of varying sizes designed for families and older residents, as well as innovative 'satellite' apartments, hotel rooms, commercial areas and related infrastructure. The initiative draws on a range of long-term resilience strategies, including adaptive site reuse and holistic design schemes to promote activity and connectivity among residents of all ages.

A large threat to the wellbeing of many elderly people is social isolation later in life. As mobility and related health considerations become a larger factor in their daily experience, engaging in activities beyond the necessary is a more substantial challenge for older residents.

The global trend of 'ageing in place', or the movement towards designing and retrofitting homes and neighbourhoods to accommodate the needs of residents at all life stages, adds immediacy to the changing infrastructural requirements of urban areas in developed and developing countries alike. Ageing in place, however, is not a feasible option for many, because the reality is that ageing is inextricably linked to a rise in the likelihood of poverty for the average individual.[22] Furthermore, the impacts of poverty on the elderly begin well before the onset of old age in many cases. Research published in the *American Journal of Public Health* has found that those living in public housing are more likely to move to nursing homes later in life,[23] affecting the lived experience and quality of life for those residents.

A variety of new housing models are being proposed worldwide with common goals such as sharing financial and domestic responsibilities, and building communities that are better able to endure challenges of all types, including disaster preparedness and response. Co-housing, also referred to as the 'village model', promotes the sharing of services such as transportation, home maintenance and health services at the neighbourhood level. A small but growing proportion of senior women are also choosing to live together to share these burdens, and to foster stability and social support later in life.[24] As trends such as co-housing and co-habitation among the elderly gain popularity, designers must consider the needs of these residential models more formally. How might the needs of four elderly women living together differ from a young family of four, and how should residential design accommodate the needs of elderly residents? Solutions include a reduction of special-function

rooms in favour of more flexible open space, in addition to the provision of ramps, elevators, first-floor bedrooms, slip-resistant flooring, and lever-based handles and faucets.[25]

The design of resilient cities requires preparedness against external events such as natural disasters, as well as internal events, including population growth and shifting age demographics. A critical component of age-friendly design is to accommodate not only the daily comfort and safety needs of residents, but also to enable appropriate action in the infrequent and often unpredictable times of emergency. Strategies for long-term urban resiliency, including designing homes and cities to allow residents to age in place, are therefore essential to managing the unforeseeable effects of low-probability but high-impact natural disaster events. ⌂

Notes
1. 'Mapping Hurricane Sandy's Deadly Toll', *New York Times*, 17 November 2012: www.nytimes.com/interactive/2012/11/17/nyregion/hurricane-sandy-map.html?_r=0.
2. Enterprise Community Partners, 'Measuring the Response to Hurricane Sandy', FEMA Assistance Analysis, 2013: www.practitionerresources.org/cache/documents/678/67899.pdf.
3. www.unfpa.org/pds/urbanization.htm.
4. www.weforum.org/content/global-agenda-council-climate-change-2013.
5. United Nations, *World Population Prospects: The 2010 Revision*, 2011: www.un.org/en/development/desa/population/publications/pdf/trends/WPP2010/WPP2010_Volume-II_Demographic-Profiles.pdf.
6. United Nations Department of Economic and Social Affairs Population Division, *Population Challenges and Development Goals*, 2005: www.un.org/esa/population/publications/pop_challenges/Population_Challenges.pdf.
7. World Health Organization, *Global Health and Aging*, October 2011: www.who.int/ageing/publications/global_health.pdf
8. United Nations Population Fund, *State of the World Population 2007: Unleashing the Potential of Urban Growth* (New York), 2007.
9. World Health Organization, *Ageing and Life Course*, 28 March 2012: www.who.int/ageing/about/facts/en/index.html.
10. World Economic Forum Global Agenda Council on Ageing Society, *Global Population Ageing: Peril or Promise?*, 2012: www3.weforum.org/docs/WEF_GAC_GlobalPopulationAgeing_Report_2012.pdf.
11. United Nations Department of Economic and Social Affairs Population Division, op cit.
12. Lauren S Fernandez, Deana Byard, Chien-Chih Lin, Samuel Benson and Joseph A Barbera, 'Frail Elderly as Disaster Victims: Emergency Management Strategies', *Prehospital and Disaster Medicine*, 17, 2, April–June 2002: www.gwu.edu/~icdrm/publications/67-74_fernandez.pdf.
13. Ibid.
14. Ibid.
15. Jeff Masters, 'Russia Records its Hottest

Temperature in History; 97L Forms Near Puerto Rico', Weather Underground, 2010: www.wunderground.com/blog/JeffMasters/comment.html?entrynum=1546
16. 'Russia, Crippled by Drought, Bans Grain Exports', *New York Times*, 5 August 2010: www.nytimes.com/2010/08/06/world/europe/06russia.html?_r=0.
17. Stefan Rahmstorf and Dim Coumou, 'Increase of Extreme Events in a Warming World', *Proceedings of the National Academy of Sciences of the United States of America (PNAS)*, 2011.
18. World Health Organization, *Global Age-Friendly Cities: A Guide*, 2007: http://whqlibdoc.who.int/publications/2007/9789241547307_eng.pdf.
19. Ibid.
20. City of New York, Office of the Mayor, *Age Friendly NYC: Enhancing Our City's Livability for Older New Yorkers*, August 2009: www.nyam.org/agefriendlynyc/docs/NYC_Age_Friendly_reportEnhancing-Livability.pdf
21. Hunziker Areal, Zürich Nord: see www.hunzikerareal.ch/home.html.
22. Andreas Hoff, *Tackling Poverty and Social Exclusion of Older People: Lessons from Europe*, Oxford Institute of Ageing, University of Oxford, October 2008: www.ageing.ox.ac.uk/files/Working%20Paper%2020308.pdf.
23. Morris Weinberger et al, 'Self-Rated Health as a Predictor of Hospital Admission and Nursing Home Placement in Elderly Public Housing Tenants', *American Journal of Public Health*, 76, 4, 1986: www.ncbi.nlm.nih.gov/pmc/articles/PMC1646513/.
24. Universal Design, 'Creating Communities to Age in Place', 2012: www.universaldesign.com/2012-06-11-16-51-43/aging-in-place/1044-creating-communities-to-age-in-place.html.
25. Kermit Baker, 'Special Function Rooms and Features Fall Away as Housing Market Continues Slow Recovery', *AIArchitect*, 19, September 2012: www.aia.org/practicing/AIAB095957.

Engadin Valley, Switzerland, 2006
opposite: Engadin's pedestrian-friendly streets and mixed-use planning encourage independent and active mobility for senior residents.

David Baker Architects, Bike lane rendering, Second Street, San Francisco, 2012
above: Prominent bike lanes in San Francisco promote safe cycling for all ages, and enable connectivity within the city.

DESIGNING FOR A LIFETIME

*Jerry Maltz,
Christine Hunter,
Eric Cohen &
Susan Wright*

IN NEW YORK AND OTHER US CITIES

Dattner Architects with Grimshaw, Via Verde – The Green Way, New York, 2012
The project was the winning entry in the international New Housing New York Legacy Competition, sponsored by the New York City Department of Housing Preservation & Development, the American Institute of Architects New York Chapter (AIANY), New York State Energy Research and Development Authority (NYSERDA) and Enterprise Community Partners. It reflects a public commitment to create the next generation of social housing. A main point of entry leads to residential lobbies and townhouse entrances located around a courtyard; it is flanked on the right by live-work units and on the left by retail spaces that host a local pharmacy and clinic among other tenants.

In the next 30 years, the number of senior citizens in the US will increase to become larger than any other single age group. How are cities starting to prepare for this huge expansion in the numbers of over-65s? **Jerry Maltz and Christine Hunter** of the Design for Aging Committee of the New York Chapter of the American Institute of Architects (AIANY), aided by **Eric Cohen and Susan Wright**, describe how New York and other US cities are laying the necessary groundwork through the World Health Organization's Age-Friendly Cities programme, while also setting up innovative centres for senior citizens, making much-needed modifications to the physical environment and developing new approaches to affordable housing.

Today US citizens are turning 65 at the rate of one every eight seconds,[1] creating an oncoming 'silver tsunami'. Those in the baby boom generation, born between 1946 and 1964, have always constituted a population bulge, and over the next three decades the number of senior citizens will increase more rapidly than any other age group,[2] reversing the traditional pattern in which they are outnumbered by younger adults and children. US cities are starting to implement innovative approaches to accommodate this demographic shift.

In New York City, the senior population aged 65 and older is now more than 993,000,[3] a number projected to rise to over 1.3 million by 2030. At 80.6 years, life expectancy is higher in New York than in the rest of the US, which means that the city will soon have not just more senior residents, but older ones, with many more living into their 80s and 90s.

A majority of seniors prefer not to move as they age and retire, but to 'age in place', remaining in the same home and/or community in which they have lived their adult lives. Evolving US healthcare policy also increasingly favours outpatient management of chronic conditions, so that long-term nursing homes are becoming less of an option even for the very frail. Because of the proximity of services, availability of public transit and pedestrian-friendly streets, urban environments accommodate ageing in place more optimally than less densely populated communities. But there are challenges as well, and modifications must be made to allow older residents to remain both safe and independent.

In 2010 New York became the first American city in the World Health Organization's (WHO's) Global Network of Age-Friendly Cities. Criteria for 'age-friendliness' have been developed by the WHO to guide cities that wish to qualify for the Global Network.[4] The American Association of Retired Persons (AARP), an established senior advocacy organisation, works with local officials and partner organisations in the US to identify communities and guide them through the implementation and assessment process. At present there are eight US cities and four counties in the AARP Network in addition to New York. The Age-Friendly Network targets improvements in eight domains of liveability[5] that influence the health and quality of life of older adults: outdoor spaces and buildings; transportation; housing; social participation; respect and social inclusion; civic participation and employment; communication and information; and community support and health services.

Age-Friendly Districts in New York City

To spur compliance in these domains, New York has established an Age-Friendly NYC Commission with representatives from elected officials, government agencies, and private and non-profit organisations. It focuses on urban planning, modification of the built environment, and provision of social and medical services.

So far the commission has established four Age-Friendly Districts throughout the city's five boroughs. Staff members work with local civic groups and businesses to raise awareness and implement specific practices: shops provide seating areas, allow the use of their toilets, and utilise large-font signage; restaurants provide large-type menus; libraries and museums develop programmes including book lectures and tours of special exhibits; swimming pools establish times for sole use by the elderly; gyms organise exercise classes; Apple offers technology classes; food markets sponsor cooking classes; and hospitals hold lectures on healthy eating. Existing resources are used in new ways: school buses drive seniors to shopping areas in their idle hours; taxi vouchers are provided; and traffic lights are rescheduled to lengthen pedestrian crossing times. Capital investments, such as new taxis and bus shelters, are designed with ageing in mind. Ruth Finkelstein, director of this Age-Friendly Initiative, notes that:
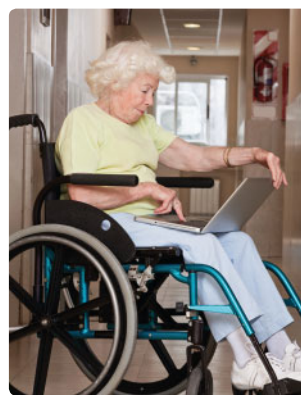
Selfhelp Community Services Virtual Senior Center
Selfhelp's virtual centres allow housebound seniors to participate in Senior Center activities remotely, using their home computer and webcam.

Use of technology has transformed the day-to-day experience of seniors as much as it has for all of society.

The more deeply we get into this work, the more clear the centrality of design, architecture, and urban planning becomes. Architects can be the standard-bearers for an 'age-in-everything' approach to design, where we do not wait to develop age-friendly design for 'old age' dwellings, gathering places, and communities, but use age-friendly design for all our work – truly creating cities and communities for all ages.[6]

Other US cities and states are establishing similar programmes. Mississippi, Texas and North Carolina now designate localities that meet certain criteria, such as offering quality medical care and recreational opportunities for seniors, as Certified Retirement Communities. Bloomington, Indiana, is designing a Lifetime Community District with retiree-friendly features like access to transportation and basic and preventative healthcare. In Auburn Hills, Michigan, city agencies collaborate to offer

concerts, potlucks and fishing competitions, as well as a senior home-repair programme that uses volunteers who also provide services such as garden maintenance and decorating. Recipients pay for supplies, but not services, and there are no income restrictions. Non-profits in Miami hold employer workshops encouraging businesses to employ older adults, and plan to use city parks for senior-targeted fitness programmes. In other areas existing senior centres are modified as skills-development hubs, with computer training and entrepreneurship programmes.

Innovative Senior Centers

New York City has embarked on a programme to develop Innovative Senior Centers offering social programmes that resonate with the identity and independence of their constituents. The centres are also charged with producing high participation rates and improved health. To this end they obtain baseline health information, track improvement, and provide education on nutrition and chronic disease management. Most importantly, their community connections provide reciprocity of intergenerational support and activities that have a long-time identity with their neighbourhoods, including gardening, theatre, or use of an Olympic-sized swimming pool. One centre is affiliated with Services and Advocacy for GLBT Elders (SAGE), the largest and oldest nationwide organisation serving lesbian, gay, bisexual and transgender older adults. In addition to culturally sensitive programmes that ease the sense of isolation felt by many GLBT elders, resources include mental-health programming and health referrals and screening. Another centre in New York is Visions, which is the first organisation in the US to focus specifically on serving a blind and visually impaired senior population.
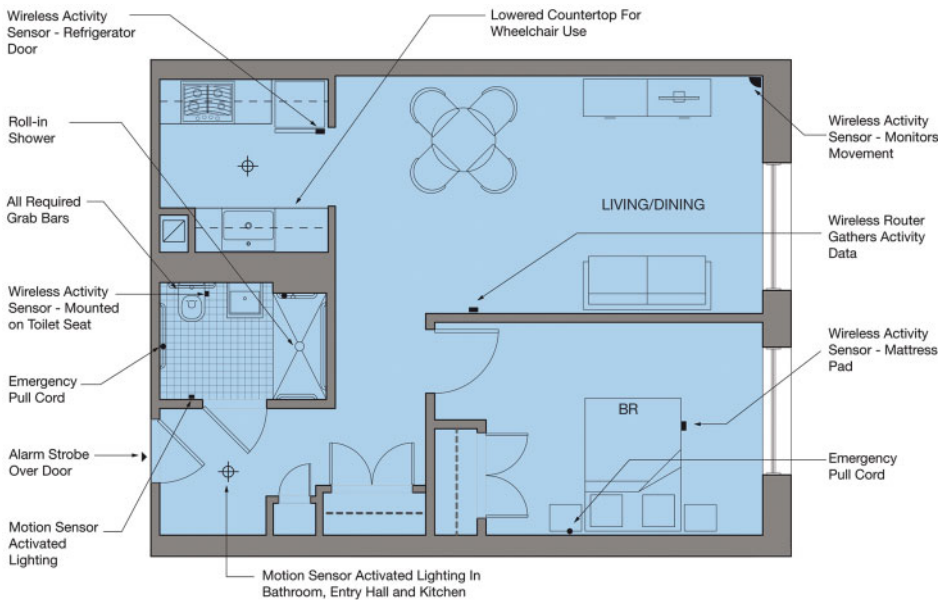
Typical unit plan showing the addition of wireless remote-sensor technology, as used by Selfhelp Community Services to augment standard senior-friendly components such as roll-in showers, emergency pull cords and grab bars.

Since isolation contributes to health deterioration, services that allow seniors to maintain contact with friends, family and healthcare providers are also critical. A notable New York example is Selfhelp Community Services, a nonprofit housing and social services organisation that has pioneered the creation of Virtual Senior Centers. Selfhelp provides such daily interaction for housebound elderly residents via computer technology within their apartments, which also allows them to participate in classes. In addition to established systems such as emergency nurse call cords in the bathrooms and bedrooms, the organisation provides remote-sensor technology connected to a computer program that recognises daily routines; the smart technology identifies out-of-the-ordinary situations and triggers an automatic alert.

Building lobbies and common rooms in Selfhelp senior housing are provided with Wi-Fi, video-conferencing stations, a computer room, telehealth and brain fitness kiosks, and exercise equipment. The telehealth system runs an array of vital medical tests, sending information directly to Selfhelp's registered nurses. In the event of a sudden or unexpected change in a resident's health or wellbeing, staff members can quickly intervene. Residents are also encouraged to use the Dakim cognitive stimulation and computer learning programs that offer engaging activities to enhance memory, mental agility and overall outlook.

Modifications to the Physical Environment

Improvements to public and private physical environments are also essential. Some cities are creating districts with wider pavements, and central reservations are being added to shorten crossing distances. Many stores have agreed to widen aisles and provide benches. Over the last few decades, compliance with federal laws such as the Americans with Disabilities Act and the older Fair Housing Act has meant that wider doorways and hallways, no-step entrances, improved railings, and grab bars or reinforcement for future grab bars are now standard in new buildings and major renovations. In addition, many localities are modifying zoning codes, allowing homeowners to add small apartments for family or caretakers.

A primary factor in determining the quality of seniors' lives is their home environment. The Design for Aging Committee of the New York Chapter of the American Institute of Architects (AIANY) recently organised an intensive one-day workshop, titled 'Booming Boroughs', to generate ideas at multiple scales for modifying existing New York City housing. The group focusing on individual apartments noted the importance of allowing residents to tailor their dwellings to their preferences. Life-long possessions are important to seniors, and adequate storage and display space is essential. Ease of circulation and vistas are critical, and technology that facilitates communication beyond the apartment should be available. For low-rise buildings where there is no elevator, a basic mandatory 'toolkit' of modifications enabling seniors to better negotiate the physical barriers of this building typology was suggested. Improving and enlarging common spaces within higher-rise buildings was emphasised to promote interaction and accommodate services. Options for sharing large apartments and for moving frail residents to lower floors were also proposed. An important principle was to view life as a continuum, with ongoing potential for choice and control, and the goal at all ages of maintaining relevance.

Lessons can be learned from evolving changes in the low-income senior apartment developments built over the last 35 years under the federally sponsored HUD 202 programme. In a presentation at the New York Center for Architecture, Edelman Sultan Knox Wood Architects discussed building modifications

Ethelind Coblin Architect, SAGE Senior Center, New York, 2012
In addition to a variety of activities sponsored by SAGE within the five boroughs of New York and across the US, this constituent plays virtual WI bowling in the Great Room of the Senior Center. The space overlooks one of the largest naturally occurring retirement communities (NORCs) in Manhattan.

A discrete audio loop system allows music and other social activities to be more fully enjoyed by SAGE Senior Center participants who use assistive hearing devices.

they have designed for 202 projects. Many residents require more assistance and companionship as they age, making it desirable to increase on-site social and medical services. To draw people out of their apartments, lobbies are redesigned as social 'hangouts' with comfortable seating, daylighting and plants. Security guards at convenient stations can become social lubricants. Rooftops may be used for recreation. Colour aids wayfinding, and patterns in corridors can indicate directions and minimise the perception of distance. Judy Edelman has found that seniors prefer swing-out awning windows, as they are easy to operate and allow good views of the street – 'where the action is!'

Many of New York's seniors live in naturally occurring retirement communities (NORCs) – buildings or neighbourhoods with a high proportion of long-term residents who are now seniors. Numerous states have enacted legislation enabling qualifying buildings to apply for designation, and making them eligible for public funding of services. Today New York City contains 47 official NORCs. A surprising number are towers-in-the-park complexes that embody the reigning architectural orthodoxy of the 1960s and 1970s, when generous government subsidy programmes existed for affordable housing. Many were built as limited-equity cooperatives, which enabled would-be residents to buy apartments at subsidised prices, but also set sales prices below-market. Without economic incentive to leave, the co-op owners have tended to remain. Nowadays, when limited-equity cooperatives are no longer built, alternative models are needed to support ageing in place. Rather than towers in superblocks, current city policy favours mixed-use, high-density developments that maintain generational and economic diversity as well as strong connections to surrounding neighbourhoods.

Recent Approaches to Affordable Housing

A recent approach by the NYC Housing Authority (NYCHA) is to offer the often under-used open space in its existing towers-in-the-park projects for additional housing construction. The sale of land generates much-needed revenue for the authority, and the new affordable housing includes units for seniors who can then vacate larger units within NYCHA's buildings, making them available for larger families. At Soundview Houses in the Bronx, two car parks at the edge of the site are being redeveloped as a mixed-use residential complex with three components: a family rental

Many of New York's seniors live in naturally occurring retirement communities (NORCs) – buildings or neighbourhoods with a high proportion of long-term residents who are now seniors.

Magnusson Architecture and Planning, New Soundview Housing, The Bronx, New York, 2012
Proposed new complex for under-utilised land along the edge of an existing 1950s public housing complex, to include a family rental building (on the left), a senior rental building (centre), and a row of two-family townhouses on the narrowest portion of the irregular site. The new buildings are designed to preserve views from the existing public housing to the adjacent city park while creating a continuous facade along the previously mapped but unbuilt street facing the park.

Dattner Architects with Grimshaw Architects, Via Verde – The Green Way, New York, 2012 Via Verde's central courtyard steps up to a series of terraces and green garden roofs. The multifunctional gardens create opportunities for active gardening, fruit and vegetable cultivation, recreation and social gathering, while also providing the benefits of stormwater control and enhanced insulation. Manhattan's skyscrapers are visible in the distance.

building with one- to three-bedroom units, a senior rental building with mostly one-bedroom units and more common space, and a row of moderate-income two-family houses for home ownership. Designed by Magnusson Architecture and Planning, the massing of the new complex mediates between the surrounding lower-rise neighbourhood and the original towers-in-the-park public housing, and will include construction of a long-mapped but unbuilt street facing a city park.

Another recent example is Via Verde (the Green Way), a mixed-use, multi-generational, affordable housing complex in the Bronx located on a former brownfield site. The 222-unit development, designed by Dattner Architects with Grimshaw Architects, contains a combination of co-op and rental apartments, from studios to three-bedrooms, suitable for individuals living alone or seniors living with their families. There are simplexes and duplexes, some of which are live-work units in a townhouse arrangement with private entrances directly from the street. The building's stepped form features a spiralling series of gardens that creates a promenade for residents and acts as a symbolic centre for the Via Verde community. A public plaza located on the north side of the building can accommodate bi-weekly farmers' markets to support Via Verde's many healthful initiatives for its residents and nearby neighbours.

The Via Verde building has been designed for sustainability, and exceeds existing guidelines for environmental responsibility. Ninety per cent of the apartments have two exposures, allowing for optimal cross-ventilation and daylight. Operable, high-performance windows, ceiling fans and exterior solar shades provide residents with natural ventilation and shading during summer. To promote physical fitness, stairs are designed as colourful interior spaces with natural light and ventilation. Outdoor stairs from the courtyard to the seventh floor provide for a continuous connection among the rooftops, which include an evergreen grove, orchard and urban farm. The rooftops are also accessible by elevator.

Since land values in almost all US urban centres have been rising more rapidly than in suburban locations, affordable senior projects in cities other than New York also have to cope creatively with challenged and marginal sites. Just south of Los Angeles' growing downtown, and immediately adjacent to the I-10 freeway, the New Carver Apartments designed by Michael Maltzan Architecture explore how architecture can create new possibilities for the city's vulnerable, under-served residents. The project's 97 units provide permanent housing for formerly homeless elderly and disabled residents. By incorporating communal spaces – kitchens, dining areas, gathering spaces and gardens – into the Carver's raised form, as well as medical and social service support facilities into the plinth beneath, the project encourages its residents to reconnect not only with each other, but also with the world outside its doors.
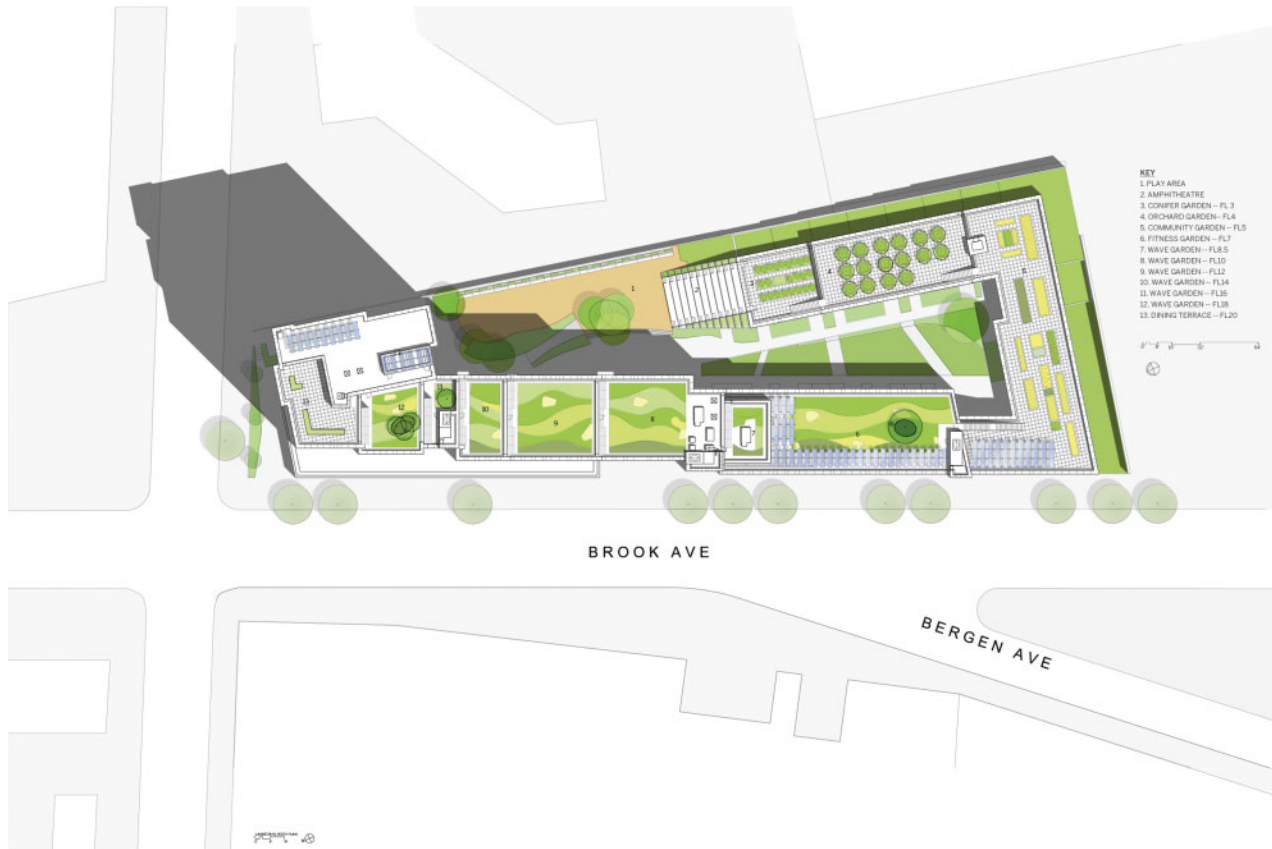
The plan shows multiple roof levels, starting in a clockwise spiral with a stairway from the plaza level and continuing with intermediate stairs to the seventh floor. The wave gardens are not accessible, but the sky terrace is accessible from the tower.
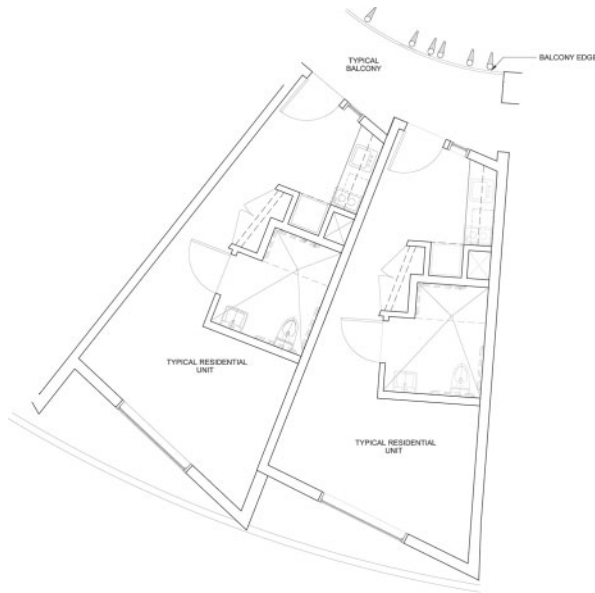
Confronted with a significant level of ambient noise from passing traffic, the form of the New Carver Apartments creates a sound buffer by minimising the building's area directly opposite the freeway; smaller-scale facets position unit windows perpendicular to the direction of sound, further shielding the unit interiors. As traffic passes from east to west, the building's facade transforms itself as its saw-tooth facets open to view. The architecture urges residents to connect with the urban context at multiple scales and from the multiple vantage points throughout the building.

What We Are Learning

The practices and specific projects discussed in this article illustrate some common themes: designing multi-generational communities, modifying existing neighbourhood places to make navigation easier for all age groups, providing a variety of services/facilities within residential buildings, designing new buildings to encourage interaction with the surrounding community, and building on difficult sites that were previously considered marginal or unuseable. The US' increasingly urban population and changing demographics will require continued efforts towards accommodating people in higher-density, pedestrian-oriented communities and creating places that enable people of all ages to live as independently and safely as possible for as long as possible. Or, put more simply, designing for a lifetime. This involves not only the home itself, be it a single-family house or a multiple dwelling, but the entire neighbourhood of human-created interior and exterior spaces. ⌂

Viewed from the freeway and the street, the project's faceted form articulates the scale of the individual units within, expressing a dynamic relationship between an urban fabric composed of individual lives producing a cumulative collective experience, and the speed of the freeway.

Notes
1. Information based on data from the US Census Bureau and the Social Security Administration, presented by US Representative David Schweikert of Arizona in a C-SPAN interview aired on 4 May 2011: www.azcentral.com/news/election/azelections/azfactcheck/fact-story.php?id=242.
2. New York City's Department of City Planning, *New York City Population Projections by Age/Sex & Borough 2000–2030, Briefing Booklet,* December 2006: www.nyc.gov/html/dcp/pdf/census/projections_briefing_booklet.pdf.
3. New York City's Department of City Planning, *2010 Demographic Tables*: www.nyc.gov/html/dcp/html/census/demo_tables_2010.shtml.
4. World Health Organization (WHO), *Global Age-Friendly Cities: A Guide,* 2007: www.who.int/ageing/age_friendly_cities_guide/.
5. AARP, *AARP Livable Communities: Great Places for All Ages*, 10 May 2013: www.aarp.org/livable-communities/network-age-friendly-communities/.
6. Ruth Finkelstein, 'Towards an Age-Friendly New York City: An Overview' talk at the Center for Architecture, New York, 5 April 2011.

SOCIALLY INCLUSIVE DESIGN IN DENMARK
THE MATURING LANDSCAPE

Terri Peters

Designing and retrofitting buildings and cities for an ageing population is an urgent global concern. The demand for specialist healthcare facilities, assisted housing and other age-related requirements continues to grow as baby boomers enter their retirement years. According to the World Health Organization (WHO), between 2000 and 2050 the proportion of the world's population over 60 years of age will double from about 11 per cent to 22 per cent.[1] This represents a significant and unprecedented demographic shift. For example, the 'young-old',[2] aged 55 to 67, of course will not have uniform needs and desires, but they will have some specific requirements of their buildings and cities that they will not have had earlier in life. These could be relating to healthcare, urban mobility, and opportunities to remain, or begin being, active to continue good health. Access to fitness, leisure and community services, small-scale shopping and local services, and appropriate transport all must be considered from their point of view.

Due to the latest science, medicine and health developments, we can assume that this generation will live even longer than previous generations. They will also be in better health as they age, with most preferring to 'age in place' rather than move into separate institutions.[3] This means their existing buildings and cities must be adapted to continue to work for them as they enter their retirement years. The WHO also reports that by 2050 the number of people aged 80 and older will have quadrupled, meaning there will be almost 400 million people aged 80 years or older making up the 'old-old' age group (aged 74 to 84) and 'oldest old' (aged 85 plus).[4] For the first time ever, the majority of middle-aged adults will have living parents. These statistics will have a

huge impact on all aspects of society as consumer markets for healthcare, assisted-living, leisure and other related services will cater to this huge demographic group. Designers must do more than just accommodate the changing needs of these clients and users. They have an opportunity to design and renovate buildings and cities that celebrate older age and encourage diverse resident groups, and to help create physical and social infrastructure that work together for people of all ages and abilities.

Those retiring now have largely inherited institutions designed in the building boom following the Second World War. Modernism led to many 'machines for healing' – hospitals, housing and clinics designed for old age that were intentionally modular, industrially inspired and institutional.[5] Authors Stephen Verderber and David Fine trace the origins of the 'nursing home' institutions that became popular in this post-war period and contextualise these in the broader history of health architecture.[6] Nursing homes are often described as having dehumanising architecture and as unpleasant social environments, and are now largely unpopular. The authors compare international modern approaches and find that in the majority of cases there is no attempt to re-create the home the people were leaving when they moved to the institution. In contrast to the European and North American examples the authors reflect upon are the contemporary examples found in Sweden, Finland and Denmark. They cite residentialist environments such as the progressive Solgaven Nursing Home in Farum, Denmark, completed in 1973 by Palle Svensons Tegnestue, which they note influenced the designs in many other countries and predated developments in the US by more than 20 years.[7]

With a tradition of social inclusion and innovative contemporary design, Denmark leads the way internationally in its architectural provision for an older population. Architect, author and researcher **Terri Peters** highlights some pioneering housing schemes in Denmark that use architecture to reduce the stigma of old age in the creation of environments that are overtly 'homey' or domestic – breaking away from the sanitised environment of the 'nursing home' – and that employ nature and landscape to positive effect, as a means of promoting healing and health.

Inclusive Design in Denmark

Denmark continues to lead the way with innovative approaches for designing for an ageing population including those with dementia.[8] The Danish Architectural Policy argues that designers have an 'architectural duty' to provide access for the mobility-impaired so that all users can participate in all aspects of society.[9] An entire section of the policy argues that innovative architecture must create healthy, accessible and sustainable buildings. Initiatives include two funded PhD fellowships on the topic of architecture and accessibility to gain knowledge in this area, and the founding of a database of excellent examples of integrated accessible design to be maintained by the Danish Architecture Centre in order to 'bring accessibility into the architecture debate'.[10]

There has been a particular focus in recent Danish designs for an ageing population on using architectural design to reduce the stigma of old age and to promote social inclusion. Another key concept has been in creating environments with domestic spaces that remind the users of, and feel like, their own homes, breaking down preconceptions of the 'nursing home' stereotype. Projects seek to integrate nature and landscape into the building's function – not as decorative or passive elements, but as key programmatic aspects for healing and health. Private balconies for fresh air, dual-aspect living spaces that allow cross breeze and natural light, and communal green spaces for gardening and walking are all used as strategies to promote health and activity.

Sølund Retirement Community

An example of a project that promotes social inclusion is by architects Henning Larsen who designed an entry for an international competition for elderly housing and care in the heart of Copenhagen. Their proposal for the Sølund Retirement Community (2012) sought to rethink the brief and create a facility that was both private and calm, and also integrated into the community. Their unbuilt entry was awarded second place, but became a valuable source of inspiration for the office's future projects due to its innovative design.

Located in some of the city's prime real estate on the Copenhagen Lakes, the design is a series of facilities arranged as one long permeable building with three internal courtyards. The building has a mix of uses including facilities for rehabilitation and therapy, information and counselling, small-scale grocery shopping, dining, gatherings and club activities for use by residents and also elderly people from the local community. The facilities also draw in the broader community and aim to incorporate many ages and levels of activity. For example, a children's daycare centre is intended to bring a mix of local people and create a more normal and diverse community feeling in this part of the city rather than an elderly-only zone.
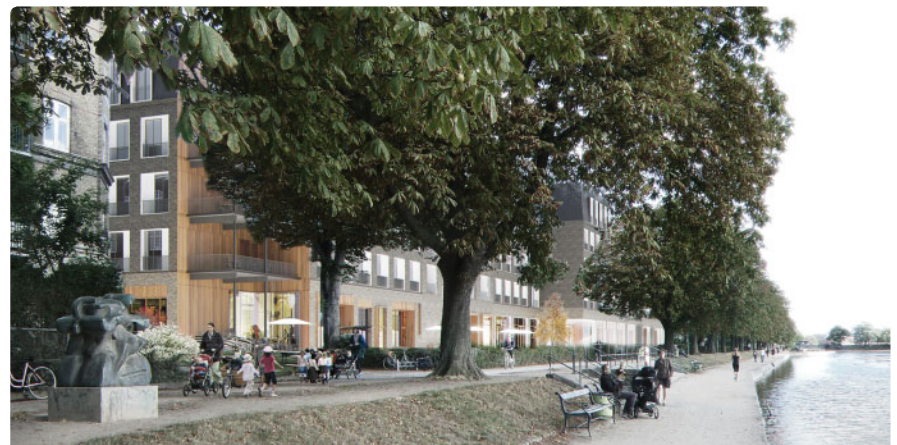
above: The public entrance to the community.

right: Lake view showing the community's relationship to the Copenhagen Lakes and the pedestrian routes that connect them together.

Another key idea was to increase visitors to the residents by designing the community to feel welcoming towards them. Buildings that are easy to access and navigate, interiors that are bright and varied, and spaces that connect to nature and landscaping create places where people want to live. One of the main drivers of the design was how to decrease the feeling of social isolation that so often comes with ageing and facilities for ageing. To retain the best aspects of urban living, the building highlights diversity of programme, relation to context, and mixing with other members of the community. The aim was to give residents a sense of connectedness and 'home' rather than feeling like they had moved into an institution.

The architects have significant experience designing buildings that successfully balance the challenges of being private and secure, but are also outward looking and welcoming. Many of the ideas developed for the unbuilt Sølund project were integrated into the Herlev Hospital extension that is currently under construction near Copenhagen. The extension integrates diverse programmatic elements within a challenging site that currently features a 1960s 120-metre (390-foot) high tower block (Denmark's tallest building) and little relation to the surrounding site. Henning Larsen's addition provides much-needed density and integration with the surrounding buildings and streets by creating a human-scale community for patients, staff, visitors and local residents. A series of low-rise buildings have three higher circular buildings on top, with internal courtyards creating day-lit interiors and views of the landscaped gardens. The transformed hospital complex will now start to knit back into the community whilst retaining its privacy and security.

Healthcare Center for Cancer Patients

NORD Architects' new healthcare centre in Copenhagen is another example of a building that employs architectural strategies to break down barriers and think differently about designing for health and wellness. Walking by their Healthcare Center for Cancer Patients (2012), it is difficult to guess what the building is used for – perhaps art studios or live/work facilities? Striking exterior and interior architectural elements, such as the folded, faceted roof, make this building stand out and be noticed. The architects aimed to de-stigmatise those needing treatment and to increase patient comfort using a building that is welcoming, recognisable and visually interesting to send the message that good design matters, and that care facilities like this one are deserving of high-quality, statement architecture.

The large scale of the building is broken up using the folded roof, and the sectional variation within creates diverse spaces to suit patients' moods: grand and day-lit for socialising, or a low and cosy nook overlooking a sheltered courtyard for reading. The street facade is clad in metal, with timber used on the internal courtyard facades. The building was designed not for ageing, but for wellness, with spaces to encourage physical and emotional rejuvenation. The project was nominated for the 2013 Mies van der Rohe European Union Prize for Contemporary Architecture, and this young office has since developed further designs for health and wellness.

NORD Architects, Healthcare Center for Cancer Patients, Copenhagen, 2011
The main space for reading and relaxing is designed as a large living room, with a variety of furnishings and lighting to suit different uses.

Cut-out windows in the walls and skylights in the faceted roofs let in daylight and offer views of the external greenery.

Ørestad Nursing Home

The striking Ørestad Nursing Home (2012) by JJW Architects is a seniors housing facility in Copenhagen with windows that seem to pop out of the main facade, giving individual expression to each apartment. The housing is conceived as a 'village', with eight buildings linked by a series of streets and squares. It incorporates a mix of uses – for example, a ground-floor hairdresser and small-scale shopping – to create a community within a community in this newly developed part of the city. In each building, private apartments feature large windows, private balconies and interiors with plenty of light. Bright, wide hallways connect the rooms to common areas and communal dining and kitchen spaces with movable walls to allow flexibility in layout, and floor-to-ceiling windows. These spaces are welcoming and non-institutional. A focus on the domestic scale means that in common areas seating is grouped together around low pendant lights, and the furniture is varied, more like a home. The kitchen and dining areas each have their own large balconies, and high ceilings make the building seem airy and uncluttered. The open-plan food preparation facilities encourage residents to make their own food, or watch it being made. As well as contemporary designs, the interiors feature Danish furniture classics and artwork from the 1950s and 1960s, referencing time periods aimed at making the residents feel at home. The high-quality furniture and furnishings give the dining and socialising areas the feeling of a gallery space or very nice cafe, a lovely place to grow old.

The office has completed several housing-for-the-elderly projects, including Fælledgården Nursing Home (2012), also in Copenhagen, which was the transformation of an existing care home institution into a residential-style elderly housing scheme with individual apartments with balconies, generous communal spaces and a landscaped shared courtyard.

Design for an ageing population does not mean specific and isolated facilities, or initiatives tacked onto existing designs, but rather integrating quality and inclusive design into daily life and the urban fabric that will last over time.

JJW Arkitekter, Ørestad Nursing Home, Copenhagen, 2012
above: The building's private courtyard creates pleasant views from above, but is also an activity space for residents to enjoy gardening and walking.

top right: Shared living rooms are residential in scale and are furnished with a mix of contemporary and mid-century designer classics.

centre right: The bright and airy main-floor reception lounge faces the courtyard and is arranged to encourage those visiting residents to linger and relax.

bottom right: A kitchen and dining lounge allows residents the freedom to fix a snack or meet together for tea.

Christians Have Care Center

The Christians Have Care Center (2010) by Arkitema was designed with the idea that it should resemble some aspects of the places residents lived in before they moved into this modern nursing home. The architects focused on designing a high quality of life for residents, in particular how they could be included in natural activities such as walking, gardening and exercise. All areas, from private rooms to staff areas and communal gathering spaces, have views of the greenery outside. Located in Copenhagen, the project features a three-storey central building that forms a protective 'wall' against the surrounding city. Well protected behind this are two three-storey houses that provide bright and welcoming residential environments. Open communal areas join the private resident spaces, connecting to open-plan spaces with kitchen, dining and sitting areas.

Architectural Design for Healthy and Active Lifestyles

In all of the examples featured here, the architects have adopted strategies that promote physical and emotional health and wellbeing through architectural and landscape design. These initiatives are being implemented in housing, retirement communities, hospitals, clinics and community centres at various scales. Design for an ageing population does not mean specific and isolated facilities, or initiatives tacked onto existing designs, but rather integrating quality and inclusive design into daily life and the urban fabric that will last over time. ᴆ

Notes
1. World Health Organization, '10 Facts on Aging and the Life Course': www.who.int/features/factfiles/ageing/en/index.html.
2. Transgenerational Design Matters private advocacy organisation: www.transgenerational.org.
3. National Aging in Place Council USA: www.aginginplace.org.
4. Transgenerational Design Matters, op cit.
5. Stephen Verderber and David J Fine, 'The Hospital as a Machine for Healing', *Healthcare Architecture in an Age of Radical Transformation*, Yale University Press (New Haven, CT and London), 2000.
6. Stephen Verderber and David J Fine, 'Architectural Environments for the Aged 1965–2000', in *Healthcare Architecture in an Age of Radical Transformation*, op cit.
7. Ibid, p 228.
8. For an example of Denmark´s innovative approach to designing for those with dementia see: www.cbc.ca/thesundayedition/shows/2012/11/14/redefining-dementia-in-denmark/.
9. Ministry of Culture, Danish Architectural Policy, May 2007: www.dac.dk/en/dac-cities/architectural-policy/architectural-policy-2007/.
10. Ibid, p 26.

Arkitema, Christians Have Care Center, Solrød, Denmark, 2010
top: The atmosphere is homely and congenial, with views of the green surroundings everywhere.

bottom: Greenery and water features are key elements in the landscaping, helping create calm natural environments for residents.

In the next half-century, Australia's population of people aged over 65 is set to almost double. As a consequence, there is an urgent need in both Australia and New Zealand, where older people value their independence, for housing that fully supports them in their own suburban homes. With only a handful of models in place, **Mark Taylor**, Professor of Architecture at the University of Newcastle, Australia, and **Laurie Buys,** a Professor in the School of Design at Queensland University of Technology in Brisbane, have tracked down some promising precedents for suburban living in adapted homes and within community-based shared housing.
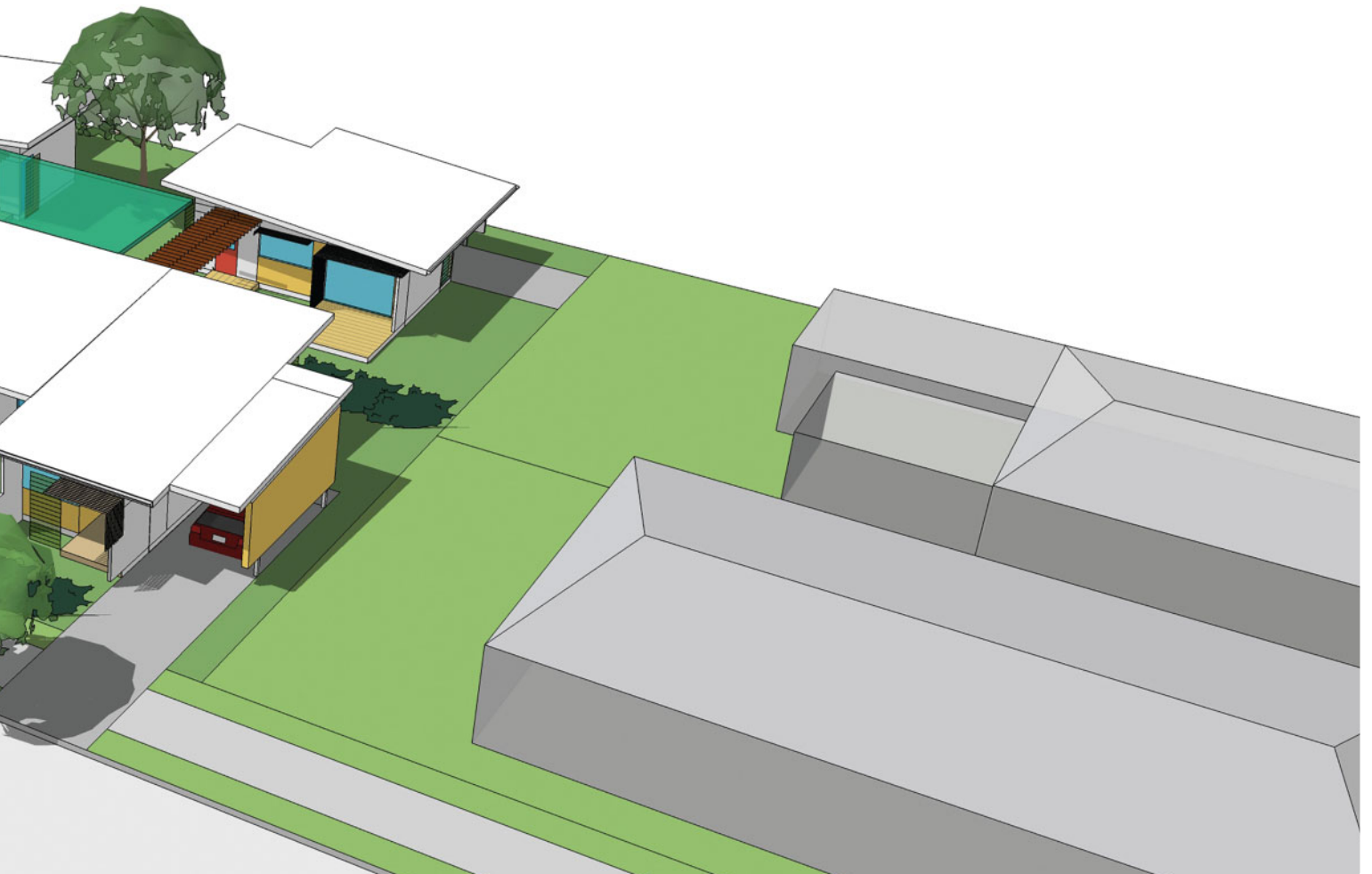
Mark Taylor &
Laurie Buys

AGEING IN SUBURBIA

DESIGNING FOR DEMOGRAPHIC CHANGE IN AUSTRALIA AND NEW ZEALAND

In *Beyond Beige* (2008), a Royal Australian Institute of Architects sponsored publication, Garlick, Jones and Luscombe argue that there is an urgent need for housing design that can be adapted 'to support older people or people with a disability at some stage in its life cycle'.[1] Despite this call, there are relatively few innovative approaches to housing for older people. This observation is particularly pertinent and might indicate a lack of credibility afforded such projects by the architectural profession. Notwithstanding the larger aged care homes that cater for dependent living, this article focuses on research that supports suburban living in either an adapted home or within community-based shared housing.

The ageing population is increasing and bringing with it many challenges to health, wealth and living environments for both developed and developing nations across the globe. Currently, Australia is faced with the prospect of an almost twofold increase in the proportion of its population who will be aged 65 years and over in less than 50 years' time. In 2011, 14 per cent (3.1 million) of the population was in this age group,[2] and by 2050 this figure is projected to rise to 23 per cent of the population.[3] Most of Australia's ageing population lives in low-density suburban environments located outside metropolitan urban centres. Here they intend to 'age in place', preferring to live in the same community as they get older. The challenge for Australian urban planners, policymakers

Brightside 2, East Malvern, Australia, 1914
The Salvation Army-managed residence used as an aged women's retreat before amalgamation into the Weeroona Senior Citizens Residence prior to demolition in the 1970s.

Canberra District Nursing Service, 1966
District nurses assist an elderly patient with a walking frame in a suburban house in Canberra.

and architects is to ensure that the design of the urban environment meets their changing needs. One difficulty for low-density suburban residents is the lack of, or infrequent, public transport services. Recent findings from a Brisbane study indicate that while most participants could walk between home and bus stops, 'the quality of the pedestrian infrastructure might be discouraging older people from using public transport'.[4]

Older Australians value their independence, and most of those living within the community intend to remain in the dwelling or locality in which they currently reside as they age. The finding that the majority of older people wish to maintain their independence is supported by national statistics gathered in 2011, showing that 94 per cent of Australians aged 65 years and over were living within the community in private dwellings. The most common living arrangement among older people was that with a husband, wife or partner (56 per cent), while the second most common was to live alone in a private dwelling. Less than one-tenth (8.2 per cent) were living with relatives (brothers, sisters or children).[5] Of the 6 per cent (180,300) who were living in non-private dwellings, the vast majority were in some type of care accommodation, predominantly nursing homes (67 per cent), followed by retiree or aged (not self-contained) accommodation (25 per cent).[6]

Ageing in Place
The desire for independent living within the community is also fuelled by early white settlement history, when the destitute elderly were incarcerated in 'protective' asylums with only basic support. Although some elderly women were taken in by families as extra help, many older people were disowned by their relatives, who sometimes changed their names to avoid filial responsibility.[7] Housing mainly 'domestically inadequate' men, many 19th-century institutions were grim places to await death. Alongside these public institutions, a number of philosophically and religiously motivated voluntary organisations such as the Salvation Army, Red Cross and the Country Women's Association also took care of the dependent elderly.

Many proposals by both providers and architects tend to focus on standards, checklists and regulatory provisions rather than engage issues of age and disability in a creative manner. Much of this hesitancy to challenge aged-care guidelines is often more due to historical conditions constrained by low budgets, and less to do with public interest. Research by Shane Murray for the Ageing of Aquarius project funded by the Australian Research Council (2003–05) looked at housing a growing number of 'baby boomers' as they enter retirement.[8] One observation of this research is that the demographic and socioeconomic diversity

of the cohort means that no comprehensive solution is possible. Moreover, there do seem to be more options for wealthy retirees. However, the typologies for senior housing are changing as Australia adopts and adapts practices from abroad. While many are focused on retirement villages, co-housing and multi-generational living, some aim to enable residents, continued participation in the broader community through extended transition from work to retirement.

It is well recognised that most older people prefer to remain in their homes, if at all possible. Ageing in place is about preference and self-determination, and in recognition of this desire it is important to explore ways that enable older people to remain at home.[9] Older people are able to benefit from and remain more independent as a result of ageing in familiar environments, especially as they become frailer.[10] There is pragmatism in living in a location where one is fully cognisant of and integrated within a local service network and can receive practical assistance from friends and neighbours. Physical attachment is one of the principal reasons underlying a need to age in place. Acute physical awareness of one's own environment is most advantageous with decline in functional health to maintain independence and maximise physical function. This has largely attracted the attention of policymakers interested in assessing the economic costs of housing an ageing society and meeting social care needs.[11]

In their study entitled 'Dwelling, Land and Neighbourhood Use by Older Home Owners', undertaken for the Australian Housing and Urban Research Institute, Judd and colleagues found that most older homeowners, when considering their future decline in ability, deemed it important that their dwellings accommodate their needs, either by easy and inexpensive modification or by being suitably designed so that modifications were unnecessary.[12] Indeed, 'retrofitting' conventional houses to accommodate growing incapacity has been considered an option by some gerontologists interested in housing and a 'continuum of care' for some time.[13] Folts and Muir suggest, however, that the gerontological vision of a 'continuum of care' for older people provided by an infinite number of housing options has never really existed.[14]

It is generally accepted that ageing in place, in their own home, is optimal for older people in terms of independence, health and wellbeing, and for the state through reduced demand for institutionalised aged care.[15] In addition to the provision of institutionalised aged care there has been ongoing discussion as to whether the Australian community should extend funding to include integrated housing, support and care options for people in later life, and if so what form these options should take.[16] An issue, however, is that housing for older people is ill-defined partly because the term has been used to describe various living arrangements serving diverse populations.[17]

Compounding the confusion is that senior housing is indistinguishable from general housing patterns.

The New Zealand example of the Brookside Garden House by Red Design Architects (Martin Hanley and Anna Kemble Welch) offers a detailed study of ageing in place. Located in the outer suburbs of Nelson, New Zealand, the home, designed for an elderly couple, provides connectivity to community activities, visually participating through glimpses to a public

above: Evening view from a local pathway across Brook Stream.
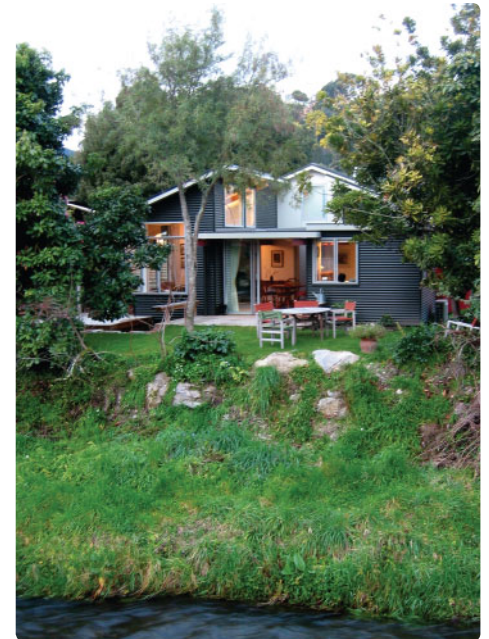
Red Design Architects, Brookside Garden House, Nelson, New Zealand, 2004
below: Ground-floor plan showing the furniture layout, alternate routes around the central hallway and exterior deck access to the garden.
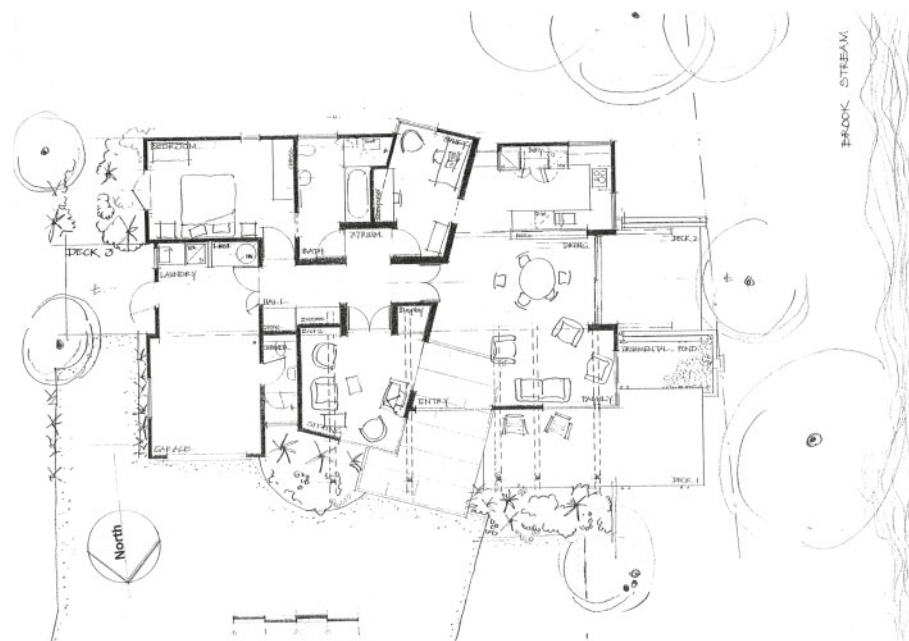
walkway and sports activities, and aurally to the sounds of children playing at a nearby school. The house is designed to be warm, sunny and low maintenance, with places to sit outside either in sun or shade, yet sheltered from the afternoon breeze. Since residents use walking frames and move with difficulty, the house responds to the landscape in a 'sedentary' manner, such that occupants have a 'passive' relationship with the garden that is enjoyed in an immersive manner. That is, the house and residents are immersed in the garden, providing a contiguous relationship between interior and landscape despite being surrounded by three neighbours.

Internally, the open-plan arrangement is an innovative response to the particularities of ageing and mobility. A wide central 'atrium' has alternative circulation routes through adjacent spaces which minimise traffic flow, allowing visitors and carers to move swiftly while the older residents travel at their own comfortable pace. The compact plan minimises distance between essential journeys while also maintaining visual communication between the two occupants as they use various parts of the home. The careful spatial organisation rejects the neo-modernist open plan for one that allows a variety of spaces that enable a bedridden occupant to be part of everyday activities, and smaller rooms to be either closed off for privacy or opened to allow for large gatherings and extra sleeping space.

Previously it was noted that there are few innovative approaches to housing for older people, a situation that might reflect an inability to design for the aged without age intruding into the design. Some architects and developers might regard mobility-friendly design as an impediment to good architecture, since it may signal the residents' age and physical status. However, Brookside Garden House recently gained a new (younger) owner because its mobility-friendly environment has not compromised the elegance of the house. Relative to ageing in place, the legacy of this house's occupation (both past and present) demonstrates how changed circumstances are not compromised by the material culture of the home and garden.

Living in the Community

In an attempt to clarify the situation, senior housing in Australia could be categorised into two major development groups. The first is development in response to the situational need for supportive housing: for example, retrofitting conventional houses to create barrier-free environments. This group could

Red Design Architects, Brookside Garden House, Nelson, New Zealand, 2004
The living area with sloping ceiling and level floor finishes between interior and exterior provides niche spaces for a bedridden occupant to be part of both the house and the garden.


also include the provision of services such as general property maintenance, social and recreational activities, group transport, and limited supervision including personal alert/emergency call systems. The second group could be seen as the active development and marketing of housing to a defined target market, the retirement community. Some Australian retirement villages are modelled on US examples of resort-style leisure-oriented retirement communities (LORCs).[18] The definitional issue, though, is further confounded in this second group with the use of such terms as 'retirement community' as catch-all phrases for all senior housing, excluding most, but not all, institutional provisions.

Efforts to standardise terminology have been frustrated by complexity in the funding, regulatory and policy arrangements, the involvement of different professions, the hybrid nature of some products, and the marketing endeavours of private-sector and community providers. These issues have been highlighted in research undertaken by Jones and colleagues where they outline the complex history involving four tiers of senior housing development.[19] These tiers include, firstly, independent living units that were developed by community organisations in the 1950s under the Aged Persons Homes Act until government capital funding was withdrawn in the mid-1980s,

and secondly hostels developed in the 1960s and early 1970s through funding and legislative changes – although more recently hostels have a greater emphasis on care and have been brought together with nursing homes under the Aged Care Act of 1997. Retirement villages are a third tier developed from the 1970s by the private and community sectors without any explicit policy direction from government, even though they were shaped by gaps left by shifts in aged-care policies. The fourth tier involves innovative projects developed in an ad-hoc fashion addressing the needs of particular groups, such as insecurely housed and homeless older people requiring special support.

The Infill Development for Older Australians in South East Queensland project includes single-level, 'backyard' infill dwelling forms (a version of 'secondary dwellings') that were tested out in a series of design charrettes where architects and planners worked alongside participants aged over 55. Conducted by the University of the Sunshine Coast and Brisbane-based architectural and urban design firm Deicke Richards, the project examined urban multistorey and assisted living as well as 'garden infill' proposals to enable living within the community. The surveys and charrettes found that 'participants preferred low to medium density housing with walkable
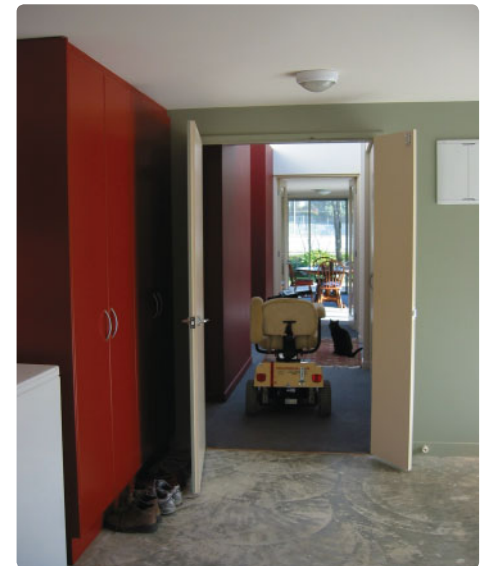
The wide central 'atrium' hallway has space for a mobility scooter or walker frame while allowing other occupants an alternative route through adjacent rooms.

The surveys and charrettes found that 'participants preferred low to medium density housing with walkable access to public transport and human scale shops and services within an age–diverse community.

access to public transport and human scale shops and services within an age-diverse community'.[20] Scenarios included four residents joining together and building small separate dwellings with shared amenities in their back gardens, and renting or selling their primary residence, thus removing the burden of maintenance while still remaining in the community. However, any innovative aspect of this proposal is offset by planning terminology and regulations that make it difficult to increase density in this manner.

To achieve care in the community and find homes that respond to these research findings not only requires more creative architectural practice, but also changes to standard urban planning and development policies, which have previously limited creative infill solutions. While research indicates the need and desire for ageing in place, the challenge for architects is to combine these findings with innovative solutions, focusing more on independent living as opposed to the community exclusion found in older-style institutions. ∆

Notes
1. B Garlick, D Jones and G Luscombe, *Beyond Beige: Improving Architecture for Older People and People with Disabilities*, Royal Australian Institute of Architects (Manuka), 2008, p 21.
2. Australian Bureau of Statistics (ABS), *Reflecting a Nation: Stories from the 2011 Census*, 2012–2013, Cat No 2071.0, ABS (Canberra), 2013: www.abs.gov.au/ausstats/abs@.nsf/Lookup/2071.0main+features602012-2013.
3. Australian Government (The Treasury), 2010 Intergenerational Report: http://archive.treasury.gov.au/igr/igr2010/Overview/html/overview_04.htm.
4. E Zeitler, Laurie Buys, R Aird and E Miller, 'Mobility and Active Ageing in Suburban Environments: Findings from In-Depth Interviews and Person-Based GPS Tracking', *Current Gerontology and Geriatrics Research*), 2012, Article ID 257186, 10 pages.
5. Australian Bureau of Statistics, op cit.
6. Ibid.
7. J McCallum and K Geiselhart, *Australia's New Aged: Issues for Young and Old*, Allen & Unwin (St Leonards), 1996.
8. S Murray, 'Ageing of Aquarius', *Architecture Australia*, May/June 2007, pp 95–8.
9. E Sherman and J Dacher, 'Cherished Objects and the Home: Their Meaning and Roles in Late Life', in GD Rowles (ed), *Home and Identity in Late Life: International Perspectives*, Springer (New York), 2005, pp 63–80.
10. See: L Heumann and D Bold, *Ageing in Place with Dignity: International Solutions to the Low-income and Frail Elderly*, Praeger (London), 1993; D Olsberg and M Winters, *Ageing in Place: Intergenerational and Intrafamilial Housing Transfers and Shifts in Later Life*, Australian Housing and Urban Research Institute, Swinburne-Monash Research Centre (Melbourne), 2005.
11. See: MP Cutchin, 'The Process of Mediated Aging-in-Place: A Theoretically and Empirically Based Model', *Social Science and Medicine*, 57, 2003, pp 1077–90; B Judd, D Olsberg, J Quinn, LA Groenhart and O Demirbilek, 'Dwelling, Land and Neighbourhood Use by Older Home Owners', *AHURI Final Report Australian Housing and Urban Research Institute*, UNSW-UWS Research

Centre (Melbourne) 2010.
12. Judd et al, op cit.
13. RJ Newcomer and JP Weeden, 'Perspectives on Housing Needs and the Continuum of Care', in RJ Newcomer, MP Lawton and TO Byerts (eds), *Housing an Aging Society: Issues, Alternatives, and Policy*, Van Nostrand Reinhold (New York), 1986, pp 3–9.
14. WE Folts and KB Muir, 'Housing for Older Adults: New Lessons from the Past', *Research on Aging*, 24, 2002, pp 10-28.
15. See Judd et al, op cit, and Olsberg and Winters, op cit.
16. A Jones, C Tilse, H Bartlett and R Stimson, 'Integrated Housing, Support and Care for People in Later Life', *AHURI Positional Paper No 108*, Australian Housing and Urban Research Institute, Queensland Research Centre (Melbourne), 2008.
17. Folts and Muir, op cit; AL Howe, AE Jones and C Tilse, 'What's in a Name? Similarities and Differences in International Terms and Meanings for Older Peoples' Housing with Services', *Ageing and Society* 33, 2013, pp 547–78.
18. A Jones, A Howe, C Tilse, H Bartlett and R Stimson, 'Service Integrated Housing for Australians in Later Life', *AHURI Final Report No. 141*. Australian Housing and Urban Research Institute, Queensland Research Centre (Melbourne), 2010.
19. Ibid.
20. C Baldwin, C Osborne and P Smith, *Infill Development for Older Australians in South East Queensland*, University of the Sunshine Coast (Maroochydore DC), 2012.

HOUSING FOR THE ELDERLY

Radhika Vaidya & Anjali Raje

THE CHANGING SCENARIO IN INDIA

Like many other countries in the world, a rise in life expectancy means that India is now facing a sharp increase in the older population; a situation that is exacerbated by other social and economic changes such as urbanisation and the erosion of the extended family that leads to greater numbers of older people living alone. Here **Radhika Vaidya**, an architect and town planner based in Pune, and **Anjali Raje**, an executive director of the International Longevity Centre – India (ILC-I), combine their expert knowledge to profile the situation in India and to showcase some new housing solutions.

The ever-increasing proportion of elderly people in the population is a demographic challenge that affects the whole world. Many developed nations anticipated this eventuality some time ago and have initiated courses of action to address it; but the developing world has not yet fully awakened to the reality. Over the course of the last decade, Indian society has become steadily more aware of the issue.

Demographics of Population Ageing in India

Citizens aged over 60 years constituted 7 per cent of the total Indian population in 2009, and this figure is projected to increase to 20 per cent by the year 2050.[1] Approximately 88 million members of the Indian population in 2013 fall into this age group, and by 2050 the number is expected to reach 315 million. Life expectancy at birth for males in 1996 was 61.6 years and for females was 62.2 years; by 2025, it is projected to increase to 69.8 years and 72.3 years respectively. The sex ratio of India as per the 2001 Census is 1,029 elderly women per 1,000 elderly men. Another interesting fact is that people aged over 80 years form the fastest-growing segment in the geriatric population, constituting 0.8 per cent today and likely to rise to 1.4 per cent by 2026.

The population is already ageing at an astonishing rate, but people, civil society and the government have not yet faced up to the challenges this entails. India and the Indian economy should be equipped to tackle the issues if they are willing to do so.

Social and Economic Aspects

The growth in the percentage of older people across the world, including in India, is due to increasing life expectancy, decreasing fertility rates, lower mortality rates and an overall enhancement of the standard of living. The younger generations from both rural and urban areas are moving away in search of better job opportunities. According to the findings of the National Family Health Survey of 2005–6, three out of every five households (about 63 per cent) in India are nuclear.[2] The waning of the extended family system and increase in nuclear families that this reveals have led to a rise in the number of older people living alone.

A first step towards sensitising Indian society towards population ageing was the country's first official policy document for older citizens. This 'National Policy on Older Persons' was formulated in 1999, and a revised draft – the 'National Policy on Senior Citizens' – was produced in 2011.

Advocacy efforts by nonprofit organisations such as HelpAge India in New Delhi and the International Longevity Centre – India (ILC-I) in Pune, to name but two, are slowly making inroads into the Indian mindset. Geriatric-friendly infrastructure in terms of roads, public transportation, public spaces, barrier-free accessible environments, housing and healthcare facilities is at a nascent stage. But its importance has been understood by the stakeholders involved in the cause. Many nongovernmental organisations, trusts and private developers are coming forward and building special communes for assisted living, across the country.

Indian elders have begun to acknowledge the fact that their wellbeing is in their own hands and that 'empowerment' comes from within. The key to this is their participation in the developmental process of society by taking the initiative themselves. Formed in 2001, the All India Senior Citizens Confederation (AISCCON) is a national organisation representing 500,000 senior citizen members across India. As a united federation, AISCCON has been very proactive, mobilising elders to participate in useful and productive activities which enhance not just their own development and wellbeing but those of society in general.[3]

Senior Citizen Housing in India

The housing sector for senior citizens has also evolved over the years, moving from the concept of old-age homes to retirement community complexes and continuing care centres.

The design of active retirement living and assisted living spaces demands prior research to make them fit for purpose. The *International Year of Older Persons (IYOP) in Asia and the Pacific, 1999* report by the Social Development Division of United Nations ESCAP lists the five 'UN Principles for Older Persons' – independence, participation, care, self-fulfilment and dignity – as guiding factors in the planning of housing for senior citizens, requiring a sensitive and elder-centric approach.[4] The necessary research parameters include study of the daily needs of the elderly, their desired lifestyles, their physical and recreational requirements, and aspects of community living. In the holistic approach that is advocated, matters pertaining to food, shelter, health, finance, security, and emotional and intellectual dimensions are to be taken care of.

Ageing manifests itself in the processes that significantly reduce a person's mobility, flexibility, coordination and perceptiveness. The scenarios in urban and rural areas require different approaches to accommodation and care-giving, as do different economic classes and physical needs.

The housing available for senior citizens in India can be broadly grouped into five categories. Firstly, there are homes for those who are completely dependent, including nursing homes that provide 24-hour supervision by licensed nurses, and hospices for the terminally ill. Secondly, there are homes for the semi-independent. Within this category fall multi-unit housing with communal social and dining facilities for independent to semi-independent people, and assisted living residences offering housing in individual rooms or dormitories with personalised support services and healthcare. Thirdly there are homes for independent seniors, whether these are active adult retirement communities or affordable/subsidised housing. A fourth category comprises day-care centres that look after elders from morning to evening. The final category involves modifications to existing homes – whether 'accessory apartments' that are added onto or created with a larger family home and designed according to the senior's requirements, or changes to the older person's own home to facilitate 'ageing in place'.

The sources of housing for the elderly in India are likewise varied. Special housing initiatives for the economically weaker sections and the rural population have been set up by NGOs, charitable trusts, semi-government organisations and the government itself. Meanwhile, private developers and trusts take care of the accommodation needs of the middle classes and elite sectors of the population. A growing number of financially independent senior citizens now prefer to stay in such retirement homes, where they can lead a secure life of dignity, peace and joy with like-minded contemporaries.

It tends to be the active retirement communities that offer the best amenities. With elder-friendly architecture and fittings ensuring greater safety, they also provide services and facilities such as housekeeping, laundry, a doctor on call, a physiotherapy room, an ambulance service linked directly to a hospital, a gymnasium, indoor games facilities, a recreation hub, a central kitchen and dining facility, and point-to-point transport to the nearest city centre. Assisted living communities offer round-the-clock nursing care in addition to the aforementioned facilities.

Community housing for India's independent elderly is available on both a sale model – where an apartment or cottage is purchased like any other housing facility, and payment for maintenance is dealt with separately – and a lease model with a refundable or non-refundable deposit. In the latter case, separate monthly maintenance charges are taken besides the initial deposit and rent, and in case of death the property reverts to the management. The minimum age of eligibility for admission is 55 years.

These types of specialised housing complexes for the elderly have emerged in the cities of Delhi, Jaipur, Bhiwadi, Pune, Chennai, Coimbatore, Goa, Mysore, Kolkata, Bhopal and Hyderabad, and also in smaller places such as Neral near Mumbai, among others. The complexes offer apartments of varied sizes or cottages of one, two or three bedrooms and are provided with all amenities and facilities.

Indian elders have begun to acknowledge the fact that their wellbeing is in their own hands and that 'empowerment' comes from within. The key to this is their participation in the developmental process of society by taking the initiative themselves.

ATHASHRI: SENIOR CITIZEN HOUSING IN PUNE

The word 'Athashri' means 'an auspicious new beginning'. All Athashri projects are built by Paranjape Schemes Construction Ltd, a public limited property company.[5] They are located at five sites within the city of Pune, with an accumulative total of about 800 units. The fifth location is within the Forest Trails township at Bhugaon, Pune, a planned integrated township. Athashri at Forest Trails has 252 apartments and is envisaged as part of a larger senior citizen complex comprising of 1,000 units with recreational and shopping facilities, a continuous care centre and a polyclinic. Another project is ongoing at Bangalore. These communes cater to a higher-middle-income clientele who wish to stay near the city and yet enjoy their own special space. The projects are managed by the Athashri Foundation, a nonprofit and charitable organisation created to ensure the efficient functioning of Athashri housing schemes, including regular maintenance.

Radhika and Aniruddha Vaidya (Aniruddha Vaidya & Associates), Athashri senior living campus, Pashan, Pune, India, 2002
top left: The clubhouse is integral to the central open space. The central garden is used for large gatherings and for celebrating India's many festivals.

top right: The architects created the Athashri senior living campus for property company Paranjape Schemes Construction Ltd, and it is managed by the nonprofit Athashri Foundation. The project has a close association with International Longevity Centre – India (ILC-I).

bottom: Layout plan. The architects designed the project around a series of green spaces and courtyards, giving character to the campus.

Athashri at the Pune suburb of Pashan offers 335 active retirement and assisted living units, for sale and lease. There are three types of unit: studios, one-bedroom apartments and two-bedroom apartments, with areas of 37, 46 and 74 square metres (400, 500 and 800 square feet) respectively. The 2-hectare (5-acre) complex was planned by architects Radhika and Aniruddha Vaidya (of Aniruddha Vaidya & Associates).[6] The unit clusters are placed around courtyards. An entrance lounge is provided in each building with a reception desk and intercom system. The apartments are equipped with elder-friendly features including emergency lights and specially designed toilets and doors. The landscaping includes an amphitheatre, gardens, temple and badminton courts, and the top terraces of the buildings are provided with kiosks. The club incorporates a gymnasium, billiard room, card-playing room, swimming pool equipped with grab bars, changing rooms and a large multipurpose hall for yoga. A dining lounge with community kitchen, entertainment lounge, seminar hall, library and two guest rooms at every level are planned. Health facilities include a doctor's room and a physiotherapy room. These spaces are designed to create an environment for active ageing in a sociable atmosphere.

In addition to the active living campus, there is another building, 'Aastha', for assisted living, with 35 bedrooms and four entertainment rooms.

top: A celebration of life: the residents enjoy music concerts held frequently at the amphitheatre.

centre: Residents enjoying a quiet evening in the reception lounge of the Athashri apartment building.

DIGNITY LIFESTYLE RETIREMENT TOWNSHIP, NEAR MUMBAI

Founded by Dr Sheilu Sreenivasan, the Dignity Foundation is a nonprofit organisation engaged in elder care that provides support and information services, life enrichment, shelter and advocacy. It has been an Associate Member of AARP International – a global network of national organisations serving the needs of the over-50s – since 2008.

One of the Foundation's projects is Dignity Lifestyle, a hassle-free retirement township that promotes active and productive living for senior citizens.[7] Catering to a middle- and higher-middle-income clientele who wish to live away from the crowded city in serene surroundings, it is located about 80 kilometres (50 miles) from Mumbai, in the rural town of Neral. Its 10-hectare (25-acre) campus offers a secure, unpolluted, quiet, clean environment with an attendant on call 24 hours a day. Designed by the Mumbai-based architect and interior designer Ashok G Chaubal, the overall masterplan comprises 500 units, of which 62 units have been built to date. A further 200 units are in the pipeline during the second phase of construction. The units take the form of single- and double-room cottages of three types: Economy, Classic and Premium, at 17, 35 and 46 square metres (180, 375 and 500 square feet) respectively. They are offered on the basis of a partially refundable deposit with separate monthly charges for accommodation (including housekeeping) and for care. These charges are minimal and on a no-profit basis. Those needing special care are accommodated in the 'Nightingales' facility, which consists of 30 rooms reserved for people with ailments requiring 24-hour assistance.

Besides the guest rooms, the campus is equipped with an internet café and library, a hairdressing salon, a recreation club, a fitness centre, a games room, a dining hall and a hydrotherapy centre with steam room and sauna. Residents can enjoy yoga, gym activities, massage, Ayurvedic therapies, food festivals, indoor games and two lectures per week. They are also engaged in social work and in the development of nearby villages, as well as being given an opportunity to showcase their talents, thus driving away the 'empty nest' syndrome. Car parking facilities and custom-built four-seater golf carts are provided for easy movement.

Ashok G Chaubal, Dignity Lifestyle, Neral, near Mumbai, India, 2006
The spacious dining hall with carefully laid-out tables. The hall is a beautiful structure with a single central pillar and a skylight. Hexagonal in shape, it enjoys a scenic view of the surrounding hills.

top: The recreation club and dining hall are planned next to each other for social interaction and indoor activities.

centre: The unique feature of the campus is that all the cottage clusters are linked to each other by covered walkways to facilitate pedestrian movement. The walkways enjoy dense greenery on either side.

bottom: The architects planned the complex nestled in the hills of Matheran, which offer a serene environment. The photograph shows the dining hall, recreation club and administration block. The cottages are surrounded by trees.

RIVA, SENIOR LIVING AT BANGALORE

'Riva' means 'to bind'. This is a retirement community built on the concept of 'integrated township' that provides its residents with elder-oriented facilities and yet is not an isolated project.[8] It is also an Indian Green Building Council (IGBC) certified campus.

Riva is part of a larger and still-growing township in one of Bangalore's fastest-developing corridors, connected to the surrounding areas by metros and highways. The township has a hotel, retail mall, commercial and residential spaces that coexist in a multi-age community. Being part of the township, the Riva senior living premises facilitate social integration and prevent isolation of the elders. The complex covers an area of 5.9 hectares (14.5 acres) and incorporates 187 one- and two-bedroom apartments at 74 square metres (796 square feet) and 110 square metres (1,187 square feet) respectively. These are offered on a range of models – sale or lease, furnished or unfurnished – and are aimed at a relatively wealthy clientele.

The Riva campus is easy and safe to navigate as most places can be accessed by pedestrian walkways through gardens without vehicular traffic. The planning is conducive to activities such as gardening, communal dining, swimming and other forms of exercise. Landscaped with lush greenery, this active ageing community is well planned with a clubhouse 930 square metres (10,000 square feet) in area, guest rooms and recreational options for the residents. It has a well-equipped gym and wellness centre, reading room, communal lounge and mini-theatre. Residents are also provided with concierge, housekeeping and laundry services.

The complex is built and managed by Tata Housing, the unique selling point being that the senior active living apartments are built as part of a larger township, thus sharing the amenities and making the project more sustainable. Tata Housing is a public limited company and one of the fastest-growing property development businesses in India.

Tata Housing, Riva township, Bangalore, due for completion 2015
left: Living independently and having an active lifestyle is more than just a choice for some, because the young at heart view it as a necessity. Tata Housing created this integrated township incorporating senior living spaces for active retirement living.

right: The Riva apartments. The L-shaped building houses the apartments, while the clubhouse forms the third arm of the building, creating a podium garden.

opposite: The reading room of the Riva complex enjoys a garden view.

LEGEND:
Riva Towers
Riva Club-House

OTHER PROJECTS AND MODELS

Some urban senior living complexes run by trusts charge a minimal amount, whereas rural modules are mostly run by charitable trusts free of charge or on a voluntary payment basis and are located at about 30 to 40 kilometres (20 to 25 miles) from the city. These have dormitory-type accommodation. The Janaseva Foundation, founded in 1988, runs one such venture at Ambi near Pune city. Dr Vinod Shah is the founder chairman of the Foundation, which strives to serve as a care provider to the weakest of the weak: the elderly, the disabled, the disaster-stricken and the destitute. The charitable trust has built an old-age home, hospital, nurses' training school and hostel and has adopted 30 villages in the vicinity. It has a 'rural recreation hub' to facilitate social interaction between the residents and the villagers. The design concept was devised by Anil Bafna, Trustee and Chief, Constructions of Janaseva Foundation.

There are many such initiatives in India to create urban as well as rural modules that cater to the housing needs of the elderly. Yet the need for urban transformation as well as more accommodation is felt. There is great potential for architects and designers in India to get involved in future provision to create assisted living premises that give elders a life of comfort, dignity, security and care. ⌂

Notes
1. The statistics in this paragraph are taken from Lekha Subaiya and W Dhananjay Bansod, *Demographics of Population Ageing in India*, BKPAI Working Paper No 1, United Nations Populations Fund (UNFPA) (New Delhi), December 2011, pp 2–3; see http://india.unfpa.org/drive/BKPAIWorkingpaper1.pdf.
2. NFHS-3; see www.rchiips.org/nfhs/nfhs3.shtml.
3. See www.aisccon.org.
4. See www.unescap.org/ageing/res/principl.htm.
5. See http://www.pscl.in/athashri.
6. See www.archvaidya.com/senior-citizen.html.
7. See http://dignitylifestyle.org/.
8. See www.tatahousing.in/riva/.

*Edward Denison
& Guang Yu Ren*

CHINA'S CONCEALED CRISIS

Today, China has more than 160 million over–64s – almost equivalent to the total combined populations of neighbouring Japan and South Korea.

China is facing a crisis. We have grown accustomed to bullish economic news from the Middle Kingdom, but while China has been enjoying years of unprecedented fiscal growth, a different form of record growth has been unfolding that threatens to undermine economic progress: China is ageing, fast. Half a century ago retired Chinese represented 7 per cent of the population. Today it is 12 per cent. The significance of this 5 per cent increase is most stark when viewed against China's population growth over the same period, from 667 million to 1.35 billion.[1] Today, China has more than 160 million over-64s – almost equivalent to the total combined populations of neighbouring Japan and South Korea.

With improved healthcare and standards of living, the United Nations estimates that by 2050, one-third of China's population will be over 60 – which equates to 439 million people, or the equivalent of the entire projected population of the US. While the World Health Organization currently classifies China as 'ageing', many of the more developed cities and provinces are already classified as 'aged', and by 2025 this elderly appellation will apply to the whole country. Over the next 40 years the proportion of China's over-60s is expected to rise from 13 per cent to 34 per cent, compared with a global average of 10 per cent to 22 per cent.[2] The social, cultural and architectural significance of China's rapidly ageing population are only just beginning to be taken seriously by policymakers and related professionals, but the impending problems currently far outweigh the available solutions.

China's ageing, like so many aspects of this huge country and its ancient culture,

presents a unique and complex problem. Ageing is a condition of 21st-century China with roots extending deep into its political and cultural past. One issue alone pervades all others: the Confucian principle of 'filial piety'. The responsibility to care for one's parents has been sacrosanct for millennia, and in contemporary China assumes a political dimension. Article 49 of the Constitution states that mature children have the duty to support and assist their parents. Parental care carries a weight and meaning that goes far beyond most conventional interpretations globally, and no other single factor dominates current attitudes to design of, and provision for, the country's rapidly ageing population.

Urbanisation and Ageing

Filial piety can be read in the design and layout of China's traditional homes, the standard model being the courtyard type. Large or small, rich or poor, the courtyard home efficiently accommodated an extended family in a single compound. Within, individual housing units were separated either by a door or an open space that acted as a buffer between different resident groups. This highly successful and flexible model, which has served Chinese households for thousands of years, receded in the late 19th century as a combination of profound social and technological change swept the country. In the line of fire were many of China's ancient codes and customs, including Confucianism, which were condemned in favour of new and often Western ideas. The individual began challenging the collective. Compounding this process of change was China's rapid industrialisation. Workers from rural areas

Architectural historian and author **Edward Denison** and architect and researcher **Guang Yu Ren** lift the lid on the complex and urgent matter of China's ageing population. The impending crisis is not only a matter of numbers – a third of China's population are projected to be over 60 by 2050 – but also one of shifting social responsibility. Whereas the care of ageing relatives has traditionally been the individual family's responsibility – filial obligation being written into the constitution – urban migration and economic development and the legacy of the One Child Policy are disrupting this, creating a greater need for state and private housing provision for the elderly.

flooded to the cities, heralding China's first wave of urbanisation in the modern era. The dense urban landscape of China's modern cities bore new housing types that were far removed from the expansive traditional courtyard model and, throughout the subsequent century, continued their divergent trajectory.

China's urban migration waxed and waned throughout the mid-20th century as Chairman Mao struggled to subdue the metropolitan centres in favour of the rural masses. However, the past four decades have seen a steady and persistent shift from the countryside to the cities, reviving the process set in motion over a century ago. By 2011, and for the first time in history, China's by now high-rise cities played host to more than half of the country's population.[3]

Coinciding with China's urbanisation was the introduction in 1979 of the controversial One Child Policy. The result has been a demographic shift of unprecedented proportions. Today, not only is China an urbanised society, but its social composition more widely is defined by a 4-2-1 structure, where an extended family unit comprises one child, two parents and four grandparents. The inverted pyramid can be read in the population statistics, where the proportion of China's young dependents has shrunk from 70 per cent of the population to 24 per cent in half a century,[4] imposing enormous burdens on the strained middle who, respecting their obligations to their parents, support five dependents while the two sets of grandparents dote on just one grandchild, often raising the grandchild while their children work.

Furthermore, China's newfound affluence has divided the elderly into 'haves' and 'have nots'. Many of those in the younger portion of the over-60s participated in the economic miracle since the 1980s and consequently have more financial freedom, widening their choices in retirement. Those in the older portion who retired before the boom have, in contrast, little or no private wealth and are entirely dependent on the basic state pension or family support.

The political and architectural reaction to China's ageing has been somewhat pedestrian and can only be viewed in the most embryonic terms – the first tentative steps in what will have to be a long-distance sprint. Current inadequacies in state provision are matched by unfavourable regulations, guidelines and incentives for investment. Filial piety continues to dominate official policy and unofficial

Courtyard house, Nan Luo Gu Xiang District, Beijing, c 1800s
The courtyard home was the conventional domestic model in China for over two millennia, accommodating an extended family in a single compound with individual housing units separated either by a door or an open space.

Yanmin Zhou (Research and Design Studio of Residential Buildings, School of Architecture, Tsinghua University), Chengguan Social Welfare House, Chengguan District, Lhasa, Tibet, 2011

above left: Aerial view of the site from the west, showing the pagoda in the foreground next to the main entrance, internal courtyards, and landscaped gardens and cairn behind.

above right: Front entrance, showing the design that is claimed to have been inspired by the Tibetan vernacular.

below: Ground-floor plan showing the arrangement of bedrooms around internal courtyards.

responses. Not only would most over-60s in China prefer to live with or near their offspring, but most mature children would also expect to care for their elderly parents. From this cultural position, the concept of a retirement home is not merely unattractive, but profoundly unpalatable. Whereas in many parts of the world the idea of putting one's parents in a home is seen as a kind and caring approach to the final years of life, in China it is more likely to elicit the reverse response, attracting widespread condemnation from family and friends, and bringing shame on the child.

However, things are changing as mature children travel further afield to seek employment. The absence of children is becoming more common and placing a heavier burden on state or other informal means of care provision. The number of elderly Chinese living alone is expected to reach 70 million by 2020, and yet there are currently just 11,000 government-owned care homes accommodating 700,000 residents – less than half of 1 per cent of China's over-64-year-olds and far too few for the growing demand of childless elderly. With an enormous shortfall in available places and the inevitability of the situation worsening, the government is starting to invest heavily in the construction of retirement homes and amend the regulatory and economic mechanisms governing this sector. Despite prevailing cultural resistance, the private sector is being encouraged to invest more heavily in this expanding industry not only to meet the current deficit in care home places, but also with the added promise of a better level of care.

In broad terms, there are currently three categories of elderly accommodation in China. One is the state-run old people's home or care centre, which have existed for decades, albeit limited in numbers and provision of care. The private sector has been attracted to this market, but high costs and a lack of regulation have prevented an outright overhaul. A second, more recent type is the private residential development designed specifically for the elderly, but without the level of medical care that an old people's home provides. The third is a portion of a regular modern commercial residential development that has been designed with the elderly in mind. The difference between these last two, which are relative newcomers in the market, is in the scale and detail, such as internal layout of apartments and access to and from the home (lifts, ramps and landscaping) and the range of facilities and services catering for the specific needs of the elderly.

In the private sector, the elderly are presently seen as one component of a bigger scheme and therefore, at best, occupying a portion of a larger development where the landscape, design, facilities and services are aimed at the needs of elderly users, though not exclusively. These types of integrated solutions are more akin to the Japanese model, which goes one important step further in siting housing for the elderly in preferential locations near transport hubs, shops and relevant services such as hospitals or smaller medical facilities. A problem confronting this type of development in China, however, is that they are not offered the same incentives often granted to regular commercial residential developments. Tax breaks, assistance at land auctions (organised by government), favourable credit rates from banks (which are all government owned) and other enticements are sometimes offered by the central government at a national policy level, but seldom passed on at the local level. Potential investors are therefore deterred from entering the market. Consequently, government land auctions are won by commercial developers who have an unfair advantage over those in the care industry, resulting in the best plots going to the commercial rather than the care sector.

Architectural Responses to Ageing
With the present benchmark set very low, examples of new developments designed specifically for the elderly are comparatively few. One example of the care home type can be found in the Chengguan District of Lhasa, the capital of Tibet, where the central government commissioned the architect Yanmin Zhou, who works in the Research and

Yanmin Zhou (Research and Design Studio of Residential Buildings, School of Architecture, Tsinghua University), Model Compound for Elderly Residents, Wuqing District, Tianjin, China, 2014
above: Floor plans of the wheelchair-accessible residential apartments showing three one- and two-bedroom units sharing a lift, with six units per floor.

below: Site plan showing the arrangement of public facilities and hospital in the northern portion of the site and the private residential areas divided into private accommodation (lower west portion) and the care home (lower east).

Design Studio of Residential Buildings in Tsinghua University's School of Architecture, to design a welfare centre for elderly people. The cultural, geographic and climatic conditions affecting the project are more complicated than in most other areas of China. At over 3,600 metres (11,810 feet) altitude and with its own unique traditions, a building for 150 elderly residents of Lhasa presents a unique architectural challenge.

Opened in July 2011, the building's outward appearance and internal function are designed to respect local traditions. Materially and stylistically, the architecture, though contemporary, is inspired by the local vernacular. At this altitude, local residents enjoy the outdoors and – unlike Chinese from the majority Han ethnic group – bask in the sun. The design therefore adopts the Tibetan vernacular of large windows and low sills to maximise sunlight coming into the building, while incorporating balconies and terraces externally to allow residents to sit in the sun.

The 4,200-square-metre (45,210-square-foot) complex has been arranged as a series of buildings around courtyards, connected by covered walkways to encourage residents to enjoy and engage with the natural environment, as well as creating efficient routes across the site. One specific function of these pathways is to accommodate daily prayer rituals, where worshippers walk from a pagoda at the south of the site to a cairn at the north through the specially designed *lingka*, or park. Residents can also worship in the privacy of their room, with each containing a blank wall for displaying religious icons. Parts of the complex – including the clinic, canteen, bath house, teahouse and

barber's (which non-residents can use for a small fee) – are open to the public to prevent residents' isolation from the wider community and to generate revenue.

An example of a larger-scale residential development designed specifically for the elderly, where the accommodation has been integrated with a variety of other services, can be found between the capital, Beijing, and the nearby port city of Tianjin in the city's Wuqing District. Here, Yanmin Zhou was commissioned by the Ministry of Civil Affairs to design a model residential compound for elderly residents containing quality medical care, leisure facilities and a serene public realm comprising landscaped gardens and a lake. As a state-run facility, the project is a rare example of government intervention in a conventionally private form of development.

The 53,000-square-metre (570,490-square-foot) site was divided into two portions and developed in two stages. The initial phase incorporated 155 apartments in the southern and more private part of the site followed by the second phase to the north, which included public facilities – a gym, clinic, conference hall and guest accommodation – that were more open and designed for relaxation and leisure by residents, guests and paying members of the public as a means of generating revenue. Although connected by shared open spaces and gardens, the two portions of the site were designed to be separate, with individual entrances and exits, to maintain privacy for the residents. The apartment buildings were all designed around courtyards and offered three types of accommodation to suit the different needs of the residents: single units;
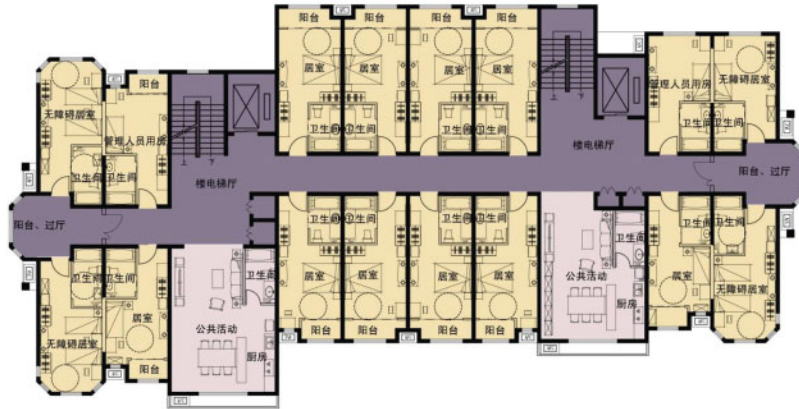
accompanied units for more than one resident; and a care home, where family members or carers can live with or in close proximity to the resident.

Both of these projects demonstrate the first stages of a potential revolution in architectural design for the elderly in China, as its ageing population not only increases to unprecedented levels, but is also supported by a proportionally smaller working population with more wealth and less cultural inhibition. While outsiders have looked on in awe at China's exceptional development over recent years as hundreds of millions of Chinese have contributed to the complete transformation of the country's urban, economic and social infrastructure, perhaps the greatest challenge of all still awaits China as this gigantic generation enters retirement and a world that has not yet been realised. ᴆ

Notes
1. World Bank, Country Data spreadsheet: 'CHN_Country_MetaData_en_EXCEL.xls': http://data.worldbank.org/country/china.
2. 'Population Aging and Development 2012', United Nations, Department of Social and Economic Affairs, Population Division: www.un.org/en/development/desa/population/publications/pdf/ageing/2012PopAgeingandDev_WallChart.pdf
3. World Bank, Country Data spreadsheet: 'CHN_Country_MetaData_en_EXCEL.xls': http://data.worldbank.org/country/china.
4. World Bank, Country Data spreadsheet: 'CHN_Country_MetaData_en_EXCEL.xls': http://data.worldbank.org/country/china.

above: Floor plans of the wheelchair-accessible residential units containing accommodation for accompanying carers, showing pairs of bedrooms at the end of each corridor, nurses' quarters and two shared kitchen and living areas for each floor.

below top: Aerial view of the second phase in the northern portion of the site containing public facilities – a gym, clinic, conference hall and guest accommodation – designed for the pursuit of relaxation and leisure by residents, guests and paying members of public.

below bottom: Aerial view of the entire site showing the southern portion in the foreground and northern portion behind.

Adaptable buildings that are effectively left open, in a perpetual state of making, have the greatest potential to cater for society's needs in the face of demographic change. Here **Robert Schmidt III**, architect and researcher, and **Toru Eguchi**, associate professor at Yokohama National University in Japan, explore how Japan, which has a rich tradition of adaptable architecture and also the highest life expectancy in the world, has embraced this approach.

Robert Schmidt III
& Toru Eguchi

Yositika Utida and the Shu-Koh-Sha Architectural and Urban Design Studio, NEXT 21 multi-family housing complex, Osaka, 1993
The project embraces the concept of a vertical neighbourhood with enlarged circulation spaces, referred to as 'avenues', and ecological gardens that allow for social interaction and activities up through the building.

MEDIATING CHANGE
A JAPANESE PERSPECTIVE ON ADAPTABLE ARCHITECTURE

House of Suzukake, Sagamihara, Kanagawa Prefecture, 2008
Several tatami rooms have been easily combined by removing the sliding partitions dividing the spaces, allowing for large groups to gather for daily activities.

One aspect of construction that could accommodate the change required as society faces population changes in terms of ageing is to consider adaptable solutions to architecture. Adaptable Futures is an international research group based at Loughborough University that has focused on investigating building adaptability as a time- rather than form-based view of architecture, namely the capacity of a building to accommodate effectively the evolving demands of its context, thus maximising its value, commercially and spatially, through life. This building-focused perspective does not withstand the wider contextual framing including location variables (transportation links), human tolerances (management philosophy) and 'soft' project contingencies (procurement structure), all of which together generate a complex relationship between designing for, deploying and implementing adaptable tactics. The group has developed a set of concepts, models and resources to provide a refined and expanded perspective on adaptability, augmenting the delivery of more adaptable buildings by embracing a menu of spatial, physical and operational (human, organisational) strategies. Adaptability in this conceptual space emphasises an architecture of transience, a disjunction between use and space, and ultimately buildings as unfinished products in a perpetual making, which as demographics change can respond to society's changing needs.

Japan provides an interesting context here, boasting the highest life expectancy in the world (86 years for women and 80 years for men) and therefore also the highest percentage of over 65s (23 per cent of the population), which is projected to grow to almost 40 per cent by 2050.[1] But despite this prolonged life expectancy, Japan has a shrinking population (since 2005) due to a decreasing child population (0 to 14 years, 13 per cent) and a birth rate of just 1.41 (ratio of live births per 1,000 population).[2] The changing demographics (including older maternal age at childbirth, a decrease in marriage and increased divorce rates) have resulted in a changing household, reducing the number of traditional multi-generational households and leaving a growing number of elderly individuals on their own. Japan has approximately 50 million households, of which 56 per cent are constituted as nuclear households and 32 per cent as single-person households. The average number of members in a Japanese household has steadily declined from five in the 1950s (for example, two parents, two children and one grandparent) to 2.42 in 2010.[3] More important are the 9.58 million households (20 per cent) that represent the growing number of elderly (aged 65 years or over), half of which (4.7 million) are single-person households (with three out of four being female). This article provides an overview of how both traditional and more modern Japanese housing schemes have adapted to these changing needs.

Traditional Residential Architecture

Traditional Japanese culture understood buildings to be ephemeral, empowering a mentality to construct buildings that could be changed easily through the use of lightweight materials and 'non-permanent' physical connections. The Ise Grand Shrine is a prominent symbol in Japanese culture that even today is rebuilt every 20 years (a reflection of the Japanese belief in all things transient and imperfect – *wabi-sabi*), thus enabling continuity of the craft. The entire Japanese home (widths and depths of spaces) is based on a standard unit of measurement, *ken*, which originates from the distance between column centres in Chinese temple construction. The dimensional system serves as a frame of reference for all components – timber structure, tatami mats (2 mats = 3.3 square metres/35.5 square feet = 1 *tsubo*), doors, and furniture. Change is further enabled with the structural design as a framed system of thin columns (with widths of 12 to 15 centimetres/5 to 6 feet to fit within the outer walls), beams and trusses (*wagoya*) that can easily be removed or added. Moreover, multi-functional rooms referred to as *wa-shitsu* (a largely empty stage deriving its identity from its temporary occupants) are connected to each other and the exterior by light, double sliding partitions and windows (*fusuma and shoji*) which are easy to shift, remove and store. Ample storage space, *oshiire*, is another important aspect as all furniture is storable. Thus, the traditional Japanese home provides an opportune framework to accommodate changing conditions – mixing physical, spatial and operational tactics.

The entrance to traditional Japanese homes steps up between the ground and the raised floor. Here, a ramp and bamboo handrails have been added to remove this barrier.

Today, many traditional wooden homes have been converted by private organisations into facilities for the elderly that are serviced by professional staff; for example, 'day service centres' that provide a place for the elderly in the surrounding community to gather (to eat, chat, or for formal/informal activities), and 'daily care housing' which in addition allows short-term stays of up to three days. The facilities are not free, and maintain a limited membership. The intent is to provide a nearby place for the elderly to relax outside of an institutional environment. An example is the House of Suzukake located in Sagamihara in Kanagawa Prefecture. The home was built in 1887 for a silk farmer, with the silk production taking place on the upper level. The new facility is an example of 'daily care housing' with a capacity of 12 for daily service, four for short-term accommodation and a total membership of 20. The initial investment to convert the home was quite minimal, as the partitions could be easily removed to open up and create a large gathering space. The perimeter hallway, *engawa*, allows for a comfortable space bridging inside and out, and thanks to the large ceiling height, additional storage has been accommodated above. Ramps and handrails were added at the entrance, and the original stairs to the second floor removed to create a larger uninterrupted space. The upper floor is also used for storage and accessible by ladder when necessary.

Modern Residential Architecture

The severe post-war housing shortage of the early part of the 20th century saw a move away from traditional construction. However, the mass-produced housing that began to replace it was met with opposition in the 1960s by a group of young Japanese architects and designers who described their approach as Metabolism. Japanese Metabolists embodied a 'megastructure' philosophy, proposing large-scale infrastructures as stable environments for prefabricated homes or other functional capsules to plug in and out of. Their aim was to remove the static theory of functionalism and embrace social change by enabling organic growth in response to evolving demands, at the same time re-establishing the traditional Japanese construction concepts of prefabrication, modularity, circular growth and renewal.

Evidence of shifting cultural conditions came in 1968, when the census of that year revealed the total number of residential units was now greater than the total number of households, launching a change in housing policy from quantity to quality, with a focus on adaptability. The response to this applied the support-infill concept proposed by Dutch architect N John Habraken, which separates the physical aspects of a building and their ownership into support (the structure/base building) and infill (interior partitions/interior fit-out) as a means of giving inhabitants a meaningful participative role in the design process.[4] Over the last 40 years, this concept has evolved in Japan as a series of government-led policy initiatives to create more adaptable living environments. The first was the Kodan-Experimental Project (KEP) in 1973, followed by the Century Housing System (CHS) in 1980.[5]
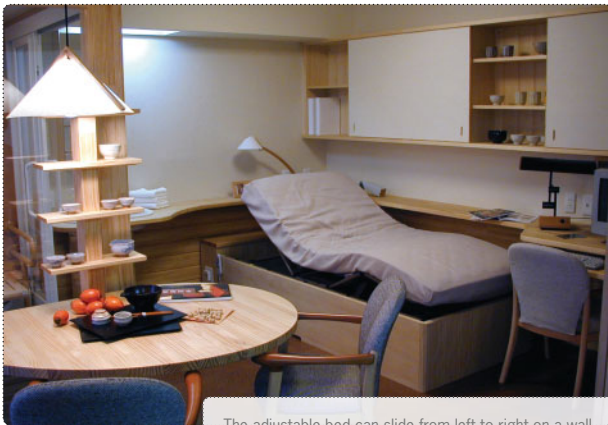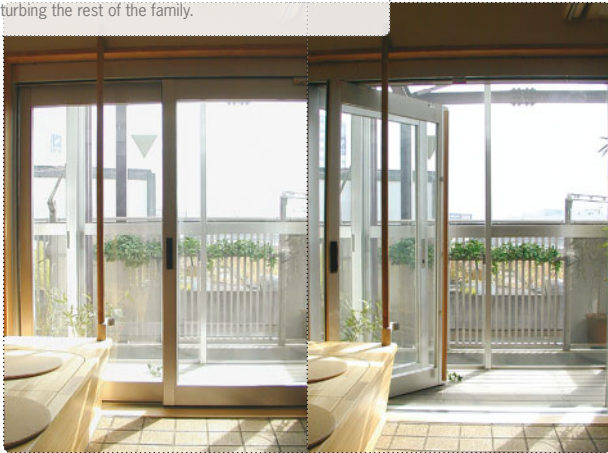
The adjustable bed can slide from left to right on a wall track to allow for different needs; the wall shelf illustrates the appropriate-height useable 'handrail'.

The unique design of the sink means it can be used as a kitchen sink (flat base) and a washbowl (depth and shape).

Wet room with balcony; the dining table in the foreground folds down to allow the sliding partition doors to close between the dry and wet spaces.

In both of the above projects, the buildings were made up of subsets of components – structural members, doors, windows and partitions, and furniture – each of which had their own performance specifications and interface details to facilitate the industrialisation and use of these 'open' components across the industry. However, despite some success, these initial two approaches were felt too complex to be easily disseminated, and in 1990 the skeleton-infill (SI) system was introduced. This simplified approach produces buildings in two steps: first the skeleton (S) (including enclosure and most utility systems), which is the permanent framework and walls of the building; and second the infill (I), or fit-out, which represents the more temporary parts that can be moved or adapted, increasing the degree of flexibility of the floor plan. However, unlike Habraken's original concept, the physical separation of the components here is not accompanied by separate ownership, which limits users' ability to adapt their space freely as certain rules apply.

The NEXT 21 multi-family housing complex (1993) by Yositika Utida and the Shu-Koh-Sha Architectural and Urban Design Studio, and commissioned by the Osaka Gas Company as accommodation for its employees and their families, is the most famous SI project in Japan and a unique example of experimental housing centred on highly individualised lifestyles, a high-density urban context and resource conservation. The project continuously documents its efficiency in terms of time, cost, material conservation, and the changes it endures. For example, the flexible piping system underneath the raised flooring means that bathroom or kitchen facilities can be easily relocated, and the unique grid enables panels and external walls to be added or removed to accommodate an additional Japanese-style room. The 18 individual residential units (140 square metres/1,500 square feet each, with six on each level) are named after the lifestyles they embody, such as House with Office or Three-Generation House. They use standard as well as non-standard components to allow individualisation and variety, but are highly coordinated in terms of component composition, performance, integration and location. Modular

coordination is established through a rulebook to ensure cohesion between the individual units and the community infrastructure, and so that adaptations can take place fluidly without further input from the original designers. The generous floor-to-floor heights (lower level 4.2 metres/13.8 feet; upper floors 3.6 metres/11.8 feet) give an openness to the units, and also provide sufficient space for services, increased storage, mezzanines, or Japanese-style sunken floors (*kotatsu*).

In another project, the SI concept was used more specifically to enable existing apartments to better accommodate ageing and elderly residents. The Raku-Inkyo (joyful retirement) research project at the University of Tokyo was led by Professor Shuichi Matsumura and designer Kyoko Muraguchi. The aim was to provide a positive alternative to institutional living that gives residents more independence by letting them remain in their beloved dwellings – allowing the home to change with the resident. The capability to remove the infill system was also important here as the need was viewed as temporary. The system developed a menu of nine infill components used in three residential applications to convert a specific area (with both dry and wet spaces) of an existing apartment to accommodate an elderly individual.[6] Many of

the infill elements such as baths and toilets have thus been designed to accommodate multiple functions. To avoid standard handrails, counters and tables were installed at an appropriate height of 75 centimetres (2.5 feet) along with a handrail-shaped wooden wall component that can also be used as a shelf. In addition, the bed can be adjusted and moved sideways, providing space either side for care activities.

Accommodating Change

Change occurs when social shifts (causes) require a physical reaction (effect) to accommodate a slippage in the relationship between demand (user) and supply (building). At its core, adaptability is about mediating this shifting relationship between a building and its ever-changing context. The brief overview here illustrates how design concepts embedded within Japan's residential building stock, and the policies deployed, have allowed the country's residential buildings to adapt well to an ageing population. As trends towards more individualised dwellings continue, the Japanese government has continued to adopt SI in its policies, and in 2006 introduced the '200-Year Housing Plan', the aim of which is to extend the useful life of homes by incorporating SI thinking as a broader sustainability initiative. ⌂

The toilet includes a wheeled cover which slides under the handrail when the toilet is in use and can serve as a table at other times.

The bathtub has been designed to double-up as a sitting bench when not in use, with the shower handle also easily removed and stored.

A sliding demountable wall with a handrail-shaped edge separates the wet and dry spaces. The bathroom door locks into place when pushing down on the 'handrail'.

The two infill spaces cater to the needs of an elderly resident within a larger family apartment and have removable sliding doors for separation.

Notes
1. Statistics Bureau of Japan, *Statistical Handbook of Japan 2013*: www.stat.go.jp/english/data/handbook/.
2. Ibid.
3. Ibid.
4. N John Habraken, *The Structure of Ordinary: Form and Control in the Built Environment*, MIT Press (Cambridge, MA), 1998, p 11.
5. Seiichi Fukao, 'Century Housing System: Background and Status Report', *Open House International*, 12, 2, 1987, p 30.
6. Shuichi Matsumura, Haruji Kobata, Kyoko Muraguchi and Yongsun Kim, 'Development of Reusable Infill Systems for Elderly People's Living', *Proceedings of the 10th International Conference of CIB W104 Open Building Implementation* (CD-ROM), 2004.

REDESIGNING DOMESTICITY
CREATING HOMES FOR THE ELDERLY

Sally Stewart

**Ks Architects, Steel Sheet Farmhouse,
Osaka, Japan, 2005**
opposite: The skylight running the length of
the house defines the boundary between the
original house and the steel sheet addition.
The new accessible living spaces are
distinguished by their white, light-reflecting
surfaces.

In keeping with the nature of the *minka,* sliding
screens vary the scenography depending on
time of day, year and activity.

Sally Stewart, Deputy Head of the Mackintosh School of Architecture at the Glasgow School of Art, highlights how nurturing a sense of 'home' can be a key ingredient in the creation of successful accommodation for the elderly and those with dementia. What, however, sets a 'home' apart from mere housing provision, and how can architects engender it? Stewart looks at some recent projects in the UK, Japan and the Netherlands in search of the answer.

Our homes are the settings for much of our lives. They provide opportunities for us to develop a sense of our individuality, shared aspirations as a family or an extended community. Increasingly, architects recognise that the potential of the home as a positive influence requires reconsideration when designing for the elderly or for those heading towards later life. Our homes are distinct from our housing; while housing can provide large-scale standardised solutions, whether in social housing or the speculative market, the home is always a unique outcome, a reflection of its occupants. Given the importance of our homes, and their relation to our lives, how are architects developing designs that can accommodate the desires and aspirations of the ageing population? How are they recognising the demands of the post-war generation who are increasingly active in old age, and have significantly different life experience and expectations to those of their parents' generation?

Some 20 years ago, Sandy Page (then Deputy Head of the Mackintosh School of Architecture) and I began to research environments for the elderly as part of a wide-ranging exploration of the relation of art design and architecture and the Third Age.[1] Having been architects in practice rather than traditional researchers, we began by reviewing the forms of housing that European architects were already providing specifically for this section of society, using a wide definition of housing: individual, family (extended or nuclear), group, independent, assisted or institutional. Our aim was to identify good practice without prejudging what that might be; our hunch was that in certain Scandinavian and northern European countries, a mature and critical practice was influencing the work being realised, an approach that was lacking in the UK.

We focused on the resulting architecture, conscious of the differing contextual, social and political situations rather than becoming caught up in detailed analysis. Our method was to visit projects at first hand, to speak to the architects, residents and providers to get a closer understanding of their aspirations and drivers, as well as to gauge the qualities and realities of the completed work. This approach was key to understanding the varied and subtle differences in expectation, context and user, and our reactions to them.

Our research has continued over time to include consideration of the more specific needs of those with dementia, and how architecture and detailed design can provide a supportive and potentially therapeutic environment that does not increase the disabling effects of dementia for sufferers and their carers.[2]

Home

The home is a fundamental element within our lives, providing security and shelter, and a base for everyday activities: eating, sleeping, relaxing, working. It is a place we belong to as individuals and family members. Over time, our homes allow us to create our own personal identities, reminding us, and those close to us, of our interests, individual and collective pasts. Our home provides a platform for pursuing our aspirations, our evolving lives, relationships and family structures and changing circumstances. The home is inevitably the place where we assert the most influence and control, and when this is not possible we can feel disempowered and alienated.[3]

Our home is also a place where we find ourselves acting as designers, modifying and customising our surroundings to deal with changes in our circumstances (family, visitors, illness) or simply making improvements to the basic container – 'homemaking' as it used to be called. In recognising the physical situations that underscore this process, architects such as London-based practice Wright & Wright, which specialises in developing designs to support those with a range of special needs, test the potential for their housing at conception rather than at realisation, by visualising the home and the end user. The interplay between the two is a starting point from which to understand how the architecture can support residents' needs rather than define them.

This is a fundamental part of what turns a house into a home, and how residents declare or assert themselves as a stakeholder. In tracing the development of domestic architecture, architect and writer Witold Rybczynski states:

New ideas about how to achieve comfort did not displace fundamental notions of domestic wellbeing. Each new meaning added a layer to the previous meanings, which were preserved beneath. At any particular time, comfort consists of all the layers, not only the most recent.[4]

It is within this complex series of layers of meaning and function that the architect must reconsider how to act as an enabler, providing houses to accommodate a range of occupants irrespective of age, activity or capability that are future proofed to meet their evolving needs.

The Elderly Within the Design Process

Irrespective of where designers themselves lie on the age spectrum, there appear to be two distinct ways of viewing the elderly: either as an intrinsic part of the wider client group (mainstream if you like), or as a group apart, separate to society as a whole. However, as Roger Coleman, Emeritus Professor in Inclusive Design at the Royal College of Art (RCA), notes:

Very little is known about the ways older people are changing and consequently little is known about what they do in their everyday lives. We will not come to understand these things by treating older people as a different species to be observed and documented: we must recognise that older people will be us in a few years' time. As designers we are designing our own future.[5]

The elderly are designed for as clients or user groups, but are seldom seen as collaborators. However, if housing for the elderly is to anticipate and meet both their needs and their aspirations, this input is crucial to guide designers' thinking and help them to recognise the variety of potential requirements. This form of design partnership is at the core, or at least present to a significant extent, in the most successful projects, providing a meaningful and fruitful outcome. If architects/designers can start to consider how they imagine their own later life, and the possibility that it may be as long, productive and varied as the earlier portion, they may begin to think differently.

The following projects illustrate a more careful consideration of the relationship between home and the elderly, and its impact on the architecture realised.

Connecting Tradition to Contemporary Life: Ks Architects, Steel Sheet Farmhouse, Osaka, Japan

The original *minka* (traditional Japanese-style farmhouse) that forms the basis of the Steel Sheet house is now completely surrounded by Osaka's vast suburbia. Hiroaki Kimura, the founding partner of Ks Architects, has acted as architect to three generations of the same family, originally for the father, his first client. The most recent work for daughter and granddaughter has entailed remodelling the original 1920s house to clarify its form, almost a step back in time, providing a more practical solution to the developing needs of the family and particularly those of a frail grandmother. This has required the synthesis of the historical significance of the original house, a respect for the cultural and traditional aspects of the Japanese way of life, and the rethinking of the necessary amenities to accommodate the needs of the elderly family member.

The solution incorporates a new entrance capsule, accentuating the threshold from the outside world (*soto*) to the domestic, aesthetic and family core (*uchi*), between the Japanese concepts of the alien and the familiar. The entrance also filters out the hubris of the suburb through a series of layers designed to control noise and light, and to limit views into and out from the house to the street beyond, effectively defining the very intimate world of the family.

To one side, a new accessible living area has been added to provide a self-contained bedroom, wet room and day space that can be reconnected to the main building by opening a series of sliding screens, thus placing the elderly person at the heart of the house.

With the removal of previous alterations and additions, the original timber structure and grid pattern becomes apparent, allowing the ground floor to operate in a traditional manner with tatami mats and paper shoji framing interconnected rooms and forming long views from the elderly living space.

How should architects act when users may be unable to participate in the design process, if the needs of those participants are to be represented? How can the resulting architecture anticipate the desires of those requiring stimulus and continuity, but with significant support needs?

**Molenaar&Bol&VanDillen architecten
(MBVDA), De Hogeweyk, Weesp, The
Netherlands, 2009**
top: Balconies and raised walkways provide
visual connections and interaction above
the ground plane.

above: Distinctive interior treatments in
each housing type provide references to
different lifestyles.

below: The development presents a
consistent edge to the neighbourhood
while providing highly articulated
exterior space at its core.
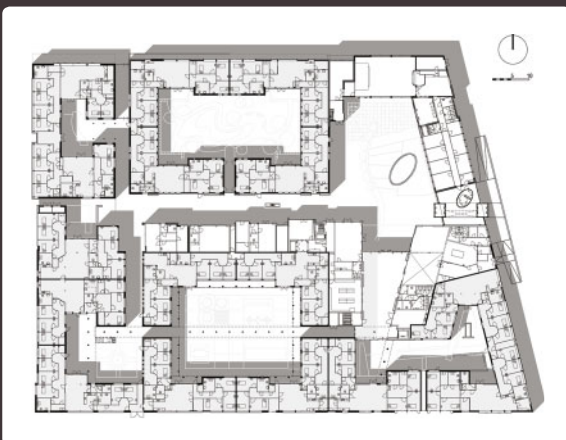
Kimura has here developed a new domestic language based on
sheet steel fabrication techniques from the shipyards of nearby
Hyogo to create a keen distinction between the traditional and
contemporary. The resulting house allows the family to once more
use their home in a way that caters for their differing and sometimes
competing needs, but without the compromises that often seem
inevitable. In so doing, the reconsidered home provides both shared
opportunities and universal gains. It is far less about extending and
adapting the accommodation, and far more about revealing the
original beauty of the timber-framed house in a new interpretation
of the familial situation.

The Custom-Built Community:
Molenaar&Bol&VanDillen architecten (MBVDA),
De Hogeweyk, Weesp, The Netherlands

How should architects act when users may be unable to participate
in the design process, if the needs of those participants are to
be represented? How can the resulting architecture anticipate
the desires of those requiring stimulus and continuity, but with
significant support needs? MBVDA's De Hogeweyk project
attempts to answer these questions, and provide a residential
environment that allows those with dementia greater continuity
of their pre-onset lifestyles, social situations and patterns of living
within the bounds of a dedicated village.

The development provides a range of seven housing types
or settings that give the impression of the variety of living
arrangements present in most contemporary Dutch communities.
Residents are able to live in a setting most familiar to their previous
home, requiring less 'learning' of a new and distinctive physical
environment, which is a particular issue for those with dementia.

Grouped around a series of interlinking courtyards, each
housing type is distinct in arrangement and interior treatment.
Six or seven residents share a house, giving a reasonable level of
intimacy and familiarity for residents and carers while reducing
stress levels. Through careful manipulation of the courtyard edge,
apartments have views or direct access through patio doors, or
sizeable balconies that provide small-scale social space.

Elder & Cannon Architects, Housing for the Elderly at Rockfield, Oban, Scotland, 2013
top: The street edge of the housing provides coherence with the existing urban context.

bottom: View across the shared garden between the apartments and detached houses. The arrangement of components allows mediation between the external Victorian street scale of the small town and the necessary intimacy of the housing group.

Residents are free to wander, shop for groceries, take part in the wider community or that of the smaller home unit. Although De Hogeweyk has been criticised for the apparent artificiality of the environment it provides, the situation is no more synthetic than any medium-sized housing development. De Hogeweyk may be seen as a highly articulated, even unique, response to housing for those requiring significant support.

Age-Specific or Universal?
Elder & Cannon Architects, Housing for the Elderly at Rockfield, Oban, Scotland

There remains a misconception that designing for the elderly has a significant financial implication in terms of additional capital or running costs.[6] In addition, it is often thought that design that takes into consideration our changing physical and cognitive performance, and uses these as design criteria, will limit other users rather than making the design outcome universally advantageous. Psychologist Bill Gillham and designer Alastair Macdonald have identified the negative impact of provisions claimed to cater for all the requirements of elderly residents rather than providing for current needs while supporting existing abilities. They note:

> The 'total care' philosophy – which the elderly themselves often vehemently reject – is one that *creates* a burden because it is disabling by its very function. The elderly are rarely seen as a resource in their own lives, and almost never as a resource in their own community.[7]

Considering the mainstream rather than the more exacting demands of those with dementia, housing which offers the active elderly a setting that links to recent life, work and community while countenancing customisation and potential progressive support would respond to the spectrum of housing needed.

Within Elder & Cannon Architects' Rockfield housing in Oban, the housing types, their physical relationships and the possibilities of public and private space have been configured with the circumstances of its setting in a small Scottish town in mind. The project aims to attract and retain an active elderly population within the heart of the town, and to provide amenities for residents and the wider neighbourhood that are currently unavailable. It anticipates the needs of the immediate population, and those it will serve in time, as well as the dynamic between residents and the wider community.

Rockfield also attempts to encourage the community to reconsider its aspirations, recognising the potential for small-scale interventions to repair the existing townscape while introducing desirable settings for living in later life. In this case, the active elderly can become a highly visible and influential group, their continued participation in the life of the town becoming a social imperative. The development of high-quality homes for the elderly within the community also acts as a marker of the town's ambitions for a dynamic and inclusive population.

Reconsidering the Architect's Role

All of us need to consider where we live, how we live, and how we will use our homes in the future, and architects need to be mindful of these same criteria when designing our housing. In designing housing for the elderly, a synthesis between the continuous thread of the notion of 'home' and the evolving needs and expectations of the ageing population is required. Here, architects take on a complex series of roles: activator, advocate, empathiser, visualiser, enabler and problem solver. In considering how they can provide the circumstances for the elderly to make the homes they wish for, and an architecture for their future selves, architects should thus heed the advice of Witold Rybczynski: 'Domestic well-being is too important to be left to the experts; it is, as it has always been, the business of the family and the individual.'[8] ⌂

Notes
1. Our collaboration began with 'Housing for the Third Age: A Study of European Housing Models for an Ageing Population the 1990s and Beyond', in Bill Gillham (ed), *The Challenge of Age*, Foulis Press (Glasgow), 1996.
2. The Just Another Disability: Making Design Dementia Friendly project, begun in 1999, brought together architects, designers, care professionals, dementia sufferers and their carers and families to create a comprehensive guide to making design dementia-friendly. It drew on good practice worldwide as well as the experience of live projects within the city that aimed in practical ways to improve the quality of life of people with dementia and those who care for them.
3. Hauge and Heggen identified the private spaces that residents feel they control as contributing to a sense of homeliness.

Solveig Hauge and Kristin Heggen, 'The Nursing Home as a Home: A Field Study of Residents' Daily Life in the Common Living Rooms', *Journal of Clinical Nursing*, 17, 4, 2007, pp 460–7.
4. Witold Rybczynski, *Home: A Short History of an Idea*, Penguin (London), 1987, p 231.
5. Roger Coleman, 'Preface', in *The Challenge of Age*, op cit, p 9.
6. At De Hogeweyk, relatives and carers comment on the level of activity that many of the residents are regularly involved in, while the level of medication required and connected cost is significantly lower than in other more conventional residences.
7. Bill Gillham and Alastair Macdonald, 'The Role of Research in Schools of Art and Design: The Implications from Practice', in *The Challenge of Age*, op cit, p 91.
8. Rybczynski, op cit, p 232.

All of us need to consider where we live, how we live, and how we will use our homes in the future, and architects need to be mindful of these same criteria when designing our housing.

REGENERATION FOR ALL GENERATIONS

London Development Agency (LDA)/
Hargreaves Associates, Queen Elizabeth
Olympic Park, 2011
The park offers pedestrian and cycle routes to
daily destinations.

THE QUEEN ELIZABETH OLYMPIC PARK

Kathryn Firth &
Manisha Patel

Kathryn Firth, Chief of Design at the London Legacy Development Corporation (LLDC), and **Manisha Patel,** a director at PRP Architects, describe how the London 2012 bid's promise to promote wellbeing and social inclusion in the Stratford area of East London is now being borne out in urban design and housing that meet 'the evolving needs and desires of people throughout their lifetimes'. A key scheme is PRP Architects' design for multi-generation houses at Chobham Manor, on the eastern side of the Queen Elizabeth Olympic Park.

At its core, high-quality design at the Queen Elizabeth Olympic Park is about quality of life. It is about creating great homes, buildings and spaces using durable and appropriate materials. It is about creating new neighbourhoods that integrate seamlessly with the existing, inviting new and old communities into and through the Park – places where people want to stay.
— London Legacy Development Corporation (LLDC), 'Design Quality Policy', September 2012[1]

The London 2012 Olympic and Paralympic Games were won with a bid, on 5 July 2005, promising to deliver new opportunities for some of the poorest and most socially excluded neighbourhoods in the city, to promote a legacy of accessibility, inclusion and wellbeing. It is no accident, therefore, that throughout the Queen Elizabeth Olympic Park, situated in Stratford, East London, there is a particular focus on creating built or natural environments that encourage and support physical activity within a cohesive neighbourhood and a vital public realm.

The residential areas of the Park recognise that walking is probably the most accessible, and clearly effective, form of exercise for everyone.[2] This is particularly the case for people over 65 years old – namely, people in their 'third age'.

The Queen Elizabeth Olympic Park has taken many clues from London's traditional urban fabric where walking and cycling is part of everyday life. Block size, therefore, balances ease of pedestrian and cyclist access, permeability and connectivity with the ability to support a variety of building types, uses and adaptability. It is also recognised that as people grow older and potentially less confident in navigating the city, built form can play a role in wayfinding, providing memorable and distinct places or landmarks.

There are many strategies employed to encourage people to walk and cycle throughout the Park and hence reduce reliability on car usage. Each of its new neighbourhoods is well served by public transport; bus stops are provided within 300 metres (980 feet) of every home, with underground and rail stations within a 10-minute walk. Most importantly, the walking and cycling routes are overlooked by buildings with entrances to the street that provide active frontages, adding to the sense of security. Routes also offer opportunities to sit, recognising the need for older people to rest.

....

PRP Architects, Multi-generation house, Chobham Manor, Newham, East London, 2013
Ground-floor, first-floor and second-floor plans. The main house is on the left with the annexe to the right.

While direct and efficient access is critical, the provision of recreational routes that allow for interesting walks or bike rides through the wider area, creating walking and cycling 'circuits', is an additional amenity for residents and visitors with leisure time. These routes are integrated with the Lea Valley's 40-kilometre (26-mile) ecological parkland corridor, and have informed the layout of the Park, with particular attention paid to providing accessible connective routes along the many waterways.

East London has historically suffered from a high residential turnover as people's circumstances change and they relocate to another part of London. In order to encourage long-term social, as well as economic, investment in the area, the communities of the Queen Elizabeth Olympic Park are designed as 'Lifetime Neighbourhoods'. The homes all meet Lifetime Homes standards, which means they have incorporated features and adaptability that ensure they will meet residents' changing needs over time. For example, entrances are illuminated and have a level access over the threshold, there is adequate space on stairways for the installation of a stair lift, and windows are located at a height that allows people to see out of them when seated. In addition, 10 per cent of the homes are wheelchair accessible. By offering a choice in the typology, size and configuration of homes, people have the opportunity, indeed are encouraged, to stay in the same neighbourhood, in which they have forged strong relationships, well into their third age.

The London Legacy Development Corporation (LLDC) selected development partners Taylor Wimpey with London and Quadrant Housing Association to help deliver the first neighbourhood on the Queen Elizabeth Olympic Park. Situated between the Athletes' Village and the Velodrome on the eastern side, Chobham Manor will comprise 850 homes, the first 250 of which will be realised towards the end of 2014. Make Architecture and PRP Architects are leading the masterplanning and design proposal.

Evolution of the Multi-Generation Home

PRP are widely recognised as leading architects in social and private housing, and housing for older people. The firm's experience has shown that there is an ever greater need for flexible, larger homes. The delay in starting families, the increased cost of housing, longer life expectancy, working from home and social media are all aspects of modern living that contribute to this. PRP's view is that the home should be a place of nurture and support, and so should allow for the evolving nature of family life. However, sufficient physical space is only one part of this.

The homes all meet Lifetime Homes standards, which means they have incorporated features and adaptability that ensure they will meet residents' changing needs over time.

above top: Internal view from the annexe's double-height space, illustrating the transition across the shared courtyard to the main family home and beyond.

above bottom: Internal view from the main house illustrating a generous family gathering space that enables a visual connection across the shared courtyard to the annexe.
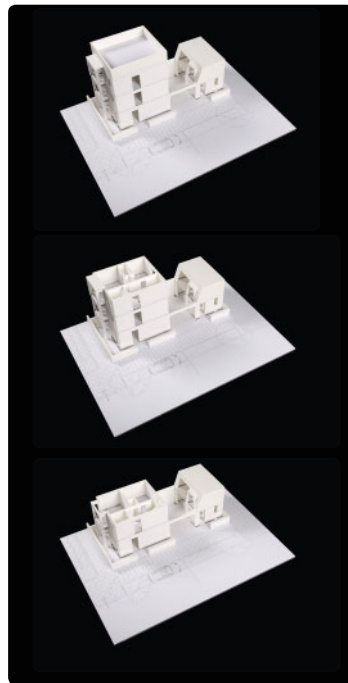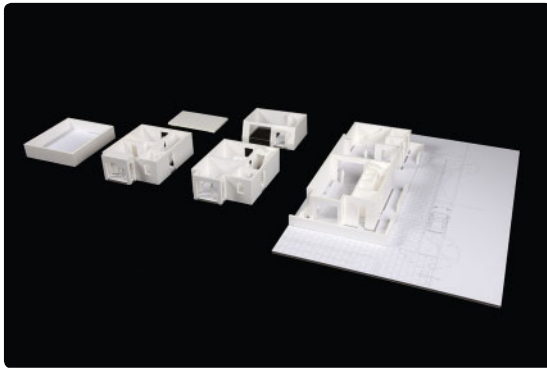
There are increasing pressures on families throughout the cycle of life. The modern family often consists of working parents, young children and ageing grandparents. Layered upon this are increasing living costs, reduced social services, increasing childcare and higher-education costs, and the challenge of getting on the housing ladder. With bank lenders requiring increased deposits on purchases of homes, and rents in London getting higher day by day, these issues led PRP to review what the contemporary family needs beyond basic Lifetime Homes requirements.

Another key consideration, for example, is that older people often want the privacy and dignity of their own space that will allow them to keep treasured possessions and furniture that so often have to be reduced down to move into smaller residential or sheltered accommodation. Downsizing can be a difficult process for many older people. Longer life expectancy presents the challenge of designing housing that will be easily used by those with less mobility and greater frailty. Flexible homes suitable for living, working and multi-generational occupation may be the answer to many of these 'new' housing dilemmas.

Located in the East London borough of Newham, Chobham Manor is bound by the boroughs of Waltham Forest, Tower Hamlets and Hackney that are home to a number of ethnic groups that require large dwellings to accommodate extended families. PRP have designed houses with up to eight bedrooms to satisfy this need on previous projects. However, they have found that due to issues of affordability, availability and changing family dynamics, along with the desire for each generation to have some degree of privacy rather than all live under one roof, another typology needed to be explored.
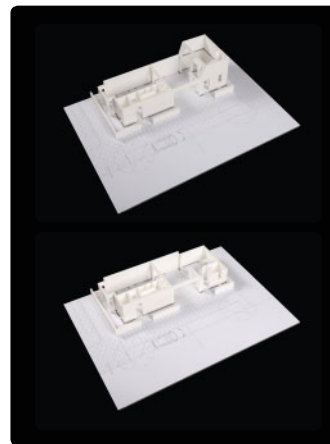
Flexible homes suitable for living, working and multi-generational occupation may be the answer to many of these 'new' housing dilemmas.

top: Physical model assembly of the constituent parts of the multi-generation house typology.

centre and bottom: Sequence of images illustrating the stacking of mass and spatial relationships.

In these areas of East London, families buy property on one street to be close together. This is not just an ethnic trend, but happening in all cultures, reflecting the ongoing need for support in a demanding world. An alternative housing typology that combines close family proximity with some level of independence has thus emerged – the 'multi-generation home', an interconnected assembly of dwellings for a large family with members across three or four generations who can live side by side yet maintain their own independence.

PRP's design for the Chobham Manor multi-generation house typology comprises a three- or four-storey dwelling adjacent to a further two-storey home. The former is a three- or four-bedroom family dwelling, and the latter a separate, self-contained annexe in the form of a one-bedroom house that can be used by grandparents, young couples, a recently qualified graduate or student, or a family member with a disability who wants to live independently yet remain nearby. The two buildings are served by separate front doors and linked via a shared courtyard garden, with roof and upper-level terraces providing access to shade and sun. On-street parking is in close proximity, and there is adequate on-plot storage space for refuse and bicycles.

The design of the Queen Elizabeth Olympic Park thus recognises that in order to become a healthy, sustainable part of the city, both urban and residential configurations must consider the evolving needs and desires of people throughout their lifetimes. ⌂

Notes
1. www.londonlegacy.co.uk/media/Design-Quality-Policy.pdf.
2. There is strong evidence of a direct relationship between the amount of physical activity people engage in, the physical environment, and the ease of access to centres of physical activity. AE Bauman and FC Bull, 'Environmental Correlates of Physical Activity and Walking in Adults and Children: A Review of Reviews', National Institute of Health and Clinical Excellence (London), February 2007: www.nice.org.uk/nicemedia/live/11679/34740/34740.pdf.

top: Street corner. Across Chobham Manor, the mainly brickwork facades make reference to traditional London typologies, with details and fenestration that provide a vertical rhythm along the street. PRP's multi-generation house has proven itself to be a particularly good solution to a corner condition, essentially mitigating the often-unresolved gable end condition.

centre: Building cross-section. Drawing illustrating the key principles of the multi-generation house typology: dedicated on-street car parking; two independent dwellings with separate off-street entrances, visually and physically linked by a shared courtyard.

bottom: Aerial view. Two separate entrances to the gable provide an active frontage and presence on the street.

'**HAPPY MEALS**'

David Birkbeck

FINDING HAPPINESS WITH HANS BECKER AND THE HUMANITAS CARE MODEL

Humanitas-Bergweg, Rotterdam, The Netherlands, 1996
Becker's conviction that older people need to have something to discuss and respond to has led to the installation of a 52-metre (170-foot) long koi carp pool in the Bergweg complex. Note how the fair-faced concrete columns supporting the access galleries are now painted gold.

Hans Becker, originally a professor at the Erasmus School of Economics in Rotterdam, is a seemingly unlikely guru for elderly care. In 1992 he was appointed Chair of the Rotterdam-based housing association Humanitas with the task of overturning the outmoded and failing commercial model of its nursing homes. He set about replacing them with 'apartments for life' that promoted independent living. In order to understand more about the successful Humanitas model, David Birkbeck, Chief Executive of Design for Homes in the UK, interviewed Becker and found out how the move to a new housing type was enabled by a philosophical shift that placed an emphasis on the engendering of happiness among its residents – with food and the creation of convivial on-site restaurant facilities proving a critical tool.

THE HUMANITAS FOUR-POINT PHILOSOPHY

1

BE YOUR OWN BOSS

If residents have the mental capacity, they are entitled to make their own choices. Humanitas sets the minimum of rules, with no-one telling you what you should and should not do, unless you have asked for their advice. This means that no-one tells you what to eat and what to drink – there is no 'health fascism'. Residents are provided with and asked to make their own choices.

2

USE IT OR LOSE IT

Residents, their families and the staff are encouraged to focus on people's strengths – what they can still do rather than what they cannot do, and keeping them doing it. Residents are also given opportunities to try new experiences and learn new skills, avoiding any sense of mounting limitations.

3

THE EXTENDED FAMILY

Everyone has something useful to offer other residents and staff, whether it is professional skills, years of experience living with a particular condition or simply spare time. People are therefore encouraged to contribute, and Humanitas rewards each volunteer with a monthly stipend of 100 euros tax free, roughly equal to 10 per cent of the basic state pension. Staff are treated as part of the same social network as residents, and there are slightly more resident volunteers than staff.

4

A 'YES' CULTURE

If residents request something, staff should 'start with yes' and then try to work out a reasonable solution. So requests for a swimming pool might be met with the organisation of membership of one nearby, and the addition of a jacuzzi within the facility. This 'yes culture' means that everyone should have a positive attitude towards resident preferences.

Medical care is leading to soaring life expectancy. By 2050, the number of people aged 60 and over will reach 2 billion and make up 22 per cent of the global population.[1] But a Dutch professor, Dr Hans Becker, believes we must not mistake improvements in care for the answer to old age because treating the elderly as patients undermines their potential for happiness.

'Too much care is worse than too little,' says Becker, who took his theories from Utrecht University, where he is Professor of Humanising Care, to the Rotterdam-based housing association Humanitas where he pioneered his 'apartments for life' model designed to reduce the need for nursing homes.

'Use It Or Lose It'

Each Humanitas scheme typically has at least 280 residents who buy or rent apartments, where they are encouraged to maintain responsibility for their cooking, cleaning and bathing. Once functions that define personal independence are handed over to carers, they are difficult to get back, says Becker, resulting in a loss of self-worth that can be as miserable as any physical impediment. Residents are urged to 'use it or lose it'.

Becker argues that loneliness is the real disease of the elderly: 'Loneliness is horrible. A care organisation has an important role, not just in cleaning people and giving injections, but in providing an extended family.'

The concept of companionship is key to Humanitas's 'care philosophy'. Each Humanitas development has a focal point, the 'senior citizens' restaurant' and in larger schemes a 'sheltered village square' with shops, ancillary bars and cafes. The restaurants are designed to create atmosphere, dressed with sculpture and paintings, finished with hard tiles to the ceilings to boost the hum of hundreds of people eating, drinking and chatting. Menus avoid a few foods not recommended for people with dentures, but otherwise offer up to 25 popular choices prepared by cooks Humanitas has hired from the restaurant industry who are instructed to focus on quality, not the bottom line. Wine and beer are encouraged, and there are comfortable smoking rooms with no stigma attached. Becker says people must be allowed to be 'the boss of their lives', with care avoiding 'health and diet dictatorship'.

Humanitas-Bergweg, Rotterdam, The Netherlands, 1996
The development replaced a hospital on a city-centre block in Rotterdam and wraps an atrium with a four-storey apartment building seen fronting the street to the right and the nine-storey landmark building.

Restaurant at Humanitas-Bergweg. The fair-faced concrete columns supporting the access galleries (right of picture) have since been painted gold.

Becker likes to point out that Humanitas is the largest restaurant business in Rotterdam, serving most of its 10,000 residents once a day. The convivial character of each restaurant is integral to the care model; his most recent book about Humanitas is called *A Taste of Good Living: The Senior Citizens' Restaurant*.[2] A third of the 280 or so residents living in each apartment complex have no care needs, many of them single people simply looking for a good apartment within a secure community with the option of not having to cook all the time. All are encouraged to volunteer, with the more able regularly helping the less able, such as taking them from their apartment to the restaurant to swap memories over a glass of wine in a place both are eager to attend.

When someone is old enough to need help to access food, a restaurant has to be about more than nutrition, says Becker. 'Our restaurants are not like those canteens where they measure out the carbohydrates and the vitamins and don't think about whether the food is cold or tastes good.' The pleasure derived from taste, atmosphere and companionship draws people out of their apartments where they would otherwise be eating alone, no doubt worrying about their health, he says. Today Humanitas has

33 developments, and according to Becker about half of their restaurants are profitable, with about 40 per cent of meals in the best taken by non-residents.

When Becker talks about providing pleasure and happiness, he illustrates his arguments with punchy aphorisms and laugh-out-loud anecdotes. But behind the good humour there is a powerful antipathy to nursing homes, which he calls 'misery islands', as well as a sound commercial proposition. Originally the professor of the economics faculty at the country's prestigious Erasmus University, he arrived at Humanitas in 1992 to find an organisation employing 1,200 people to house 1,300; today the ratio is one employee to three residents. He says staff wore white hospital uniforms, and he describes the buildings of the time as being all grey and white 'because everything was about hygiene' – a large number of walls and ceilings have since had murals of animals, fish and birds painted over their original finishes. Crucially, the organisation was losing a lot of money, which Becker says is the problem with any care regime wholly dependent on medical intervention. 'The cheapest form of medical care costs 50 cents a minute, the most expensive can

Humanitas-Akropolis, Rotterdam, The Netherlands, 1998
Up to 500 residents live in Humanitas's 12-storey tower, half of which accommodates a nursing home for dementia patients, with the other half for patients with various chronic diseases. The attached Gerrit Spronkers house, realised in 1996, offers 103 'apartments for life'. The old part of the complex underwent a major renovation in 1998 when multiple rooms were replaced by light and spacious single and double rooms with private bathrooms.

Apartments at Humanitas-Akropolis are accessed along elaborate access decks facing onto a seven-storey atrium decorated with planting and bright mementoes.

The Humanitas 'apartments for life' model provides large, well-lit bedrooms with access to generous balconies, as shown here at Humanitas-Akropolis.

be hundreds of euros an hour. But a good bar tender can be as important as a physician.'

'People needed to have people to talk to, to have things to do and new activities to explore,' he adds, explaining how Humanitas has learnt that investing in 'talking points', whether that means bringing in professional entertainment a couple of times a week or constructing a 52-metre (170-foot) long koi carp pool meandering through a development's restaurant (such as can be found in the Bergweg scheme), reduces demands on medical staff as residents are distracted and therefore less likely to focus on their aches or problems related to untreatable ailments.

Diversion does not cut care bills by up to 20 per cent just because it makes people happier. When Humanitas organised for a zoo to show a camel to residents in one home, the animal relieved itself of 40 litres (9 gallons) of urine. Becker says residents were so keen to relive the hilarious moment with each other that for days the medical staff were much less in demand. Humanitas not surprisingly has an open-door policy on pets, supported by another Becker motto: 'The mangy mongrel may be just as important as the nurse.'

View from apartment into the atrium of the Humanitas-Akropolis complex.

Any Colour But Neutral

Providing the facilities to sustain a rich range of amenities and entertainment is what drives the large-scale design of Humanitas developments. Buildings house around 240 apartments in a mix of slab blocks and high-rises owing to the pressure on space in the Netherlands. Common parts are decorated in an eclectic style with components selected for their ability to inspire conversation, and warm colours are generally preferred to anything cool, calm or ascetic – concrete columns supporting access decks are sprayed gold. The aesthetic is always about getting people to talk, so a Tiffany-style lamp is preferred over the latest in minimalist downlighters, and the lobby of one home, where residents park mobility scooters, is filled with a collection of antique mobility aids. Few surfaces are left unadorned and communal areas tend to be filled with cultural curiosities from former Dutch colonies or the Netherlands before 1939.

The apartments themselves are generous, with minimum floor space at 70 square metres (750 square feet) for one-bed units while the most recent schemes have apartments up to 300 square metres (3,230 square feet). Residents pay per square metre. Each apartment has its own lockable front door, and care workers cannot enter uninvited. Unlike the bedsit-like arrangement of nursing homes, all of the plans include living space where the resident can accept visitors away from the sleeping area. All units also have their own bathrooms.

The apartments are accessible for wheelchair users, and also have enough space to move a person on a stretcher. Wide doors and the absence of thresholds are standard, along with lever taps, smoke detectors, adjustable sink units, door and window fastenings designed for weaker grips, computerised door keys, lockable letterboxes, a large bathroom, easy access to the balcony, and meters that can be read at wheelchair height.

In recent years, Humanitas has added elements specially designed for people with dementia to its existing 'apartments for life'. Residents may stay until the end of their lives in an apartment for life, but if one partner cannot carry the burden of the other's dementia in the couple's apartment, Humanitas moves the dementia sufferer to a small cluster of studios for six to eight people around a shared living room and open

A 1930s kitchen in Humanitas's first 'memory museum' in the basement of the Humanitas-Akropolis complex. Seeing things familiar only from their childhood is understood to spark more lucid spells in dementia patients. Three more memory museums have since been incorporated in other Humanitas locations.

A 1950s-style kitchen in the 'memory museum' at Humanitas-Akropolis.

You cannot cure the diseases of old age. [...] But you can find a counterforce with happiness. And so you have to ask: how do we make older people happy? — *Hans Becker*

kitchen. The healthier partner is then encouraged to spend time with their partner in the shared parts of the development, including the 'memory museum' where a number of rooms are meticulously dressed like a living room or kitchen from the 1920s or 1930s, complete with period details such as solid fuel ranges, Bakelite switch plates and food packaging from the era. Seeing things familiar only from their childhood is understood to spark more lucid spells.

Residents can contract the Humanitas health and care services when they need them, but are free to organise care from other providers. Typically, each development will offer access to personal care, nursing care, a psychologist, social worker, dietician, speech therapist, GP and other health and care services. These are always based among the ground-floor facilities as though part of the usual high-street provisions.

Humanitas always retains ownership of at least 51 per cent of the apartments in each complex, but will usually look to sell about 15 per cent at the time of construction. Over the long term, the organisation generates profits from the sale and rent of apartments to reinvest in the not-for-profit company.

In 2012, Dr Becker retired as the chair of Humanitas after 20 years' service. Born in 1942, he continues to hold a role within Humanitas, and the organisation's approach is beginning to have further influence outside Rotterdam due to the impact of the 2008–9 banking crisis. Compulsory insurance policies designed to cover care costs are no longer covering all of the bills, and this has led to the closure of many nursing homes, something Becker quietly welcomes as it lessens the state's ability to respond to its ageing population by resorting to 'nursing'. 'You cannot cure the diseases of old age. They do not get better,' he says. 'But you can find a counterforce with happiness. And so you have to ask: how do we make older people happy?'. ∆

The text is based on face-to-face meetings between the author and Dr Hans Becker during January and October 2013.

Notes
1. *World Population Prospects: The 2010 Revision*, United Nations, Department of Economic and Social Affairs, Population Division, 2011: www.un.org/en/development/desa/publications/world-population-prospects-the-2010-revision.html.
2. Hans Marcel Becker, *A Taste of Good Living: The Senior Citizen's Restaurant*, Eburon Academic Publishers (Delft), November 2012.

Older people tend to access lifts slowly. Becker's response to this is to give anyone waiting something to talk about. At Humanitas-Akropolis, a stained-glass ceiling light cupola and jungle wildlife wall painting around the central elevator provide such a talking point. This is carried through the whole complex by creative interior design as well as a mix of classical and modern artworks and wall paintings.

CUSTOMISED 'CARE-READY' LIVING

A HAPPI-INSPIRED DESIGN FOR EVOLUTIONARY HOUSING BY WALTER MENTETH WREN ARCHITECTS

Walter Menteth Wren Architects, Housing for the elderly, Bishop's Waltham, Hampshire, 2013
Gardens, flats, balconies and solar arrays terrace down towards allotments, a wildlife meadow and common land from a lightweight transparent roof that covers the communal courtyards and reduces heat loss. This draws its precedent from the roof form of the clay tile factory that previously occupied the site, and the work of the French architects Lacaton & Vassal.

If current challenges are to be overcome, prescience is required to address issues creatively with innovative thinking and solutions. Climate change, energy security, our housing supply and specifically third-age housing needs are particularly pressing questions in contemporary society.

The Housing our Ageing Population: Panel for Innovation (HAPPI) published two influential reports in 2009 and 2012, with extensive research, analysis and a series of proposals addressing UK deficiencies in the supply of third-age housing and the emerging shortage.[1] It recommends designs that reflect best practices in domestic environments, and draws extensively upon the know-how of continental European housing industries, where apartment homes are culturally conventional. In Europe, older people experience the benefits of greater security and less maintenance, and enjoy the conviviality of shared space. The success and benefits of their mutually supportive co-ownership and co-housing with meaningful stakeholder engagement is highlighted. It affirms that the value of good design allows older people to be happier and stay at home for longer. The first report in particular is essential reading and has precipitated a step-change in attitudes to this housing sector and the need for UK reform.

Walter Menteth Wren Architects' entry to the 2012 Royal Institute of British Architects (RIBA) Re-imagine Ageing housing competition for a new concept in retirement living, sponsored by McCarthy & Stone,[2] drew upon the HAPPI reports to propose a contextual architectural design for a site in the small town of Bishop's Waltham in Hampshire, UK.[3] Here, innovative ideas for fully independent dwellings for the active elderly in a socially cohesive 'lifetime' neighbourhood were developed within a delivery model capable of expanding market supply.

Impending Change: the Need for High-Quality, Private Housing for the Elderly

In 2008, there were 9.9 million people in the UK aged 65 and over; by 2033 that number is predicted to be 16.4 million, with 23 per cent of the population projected to be 65 and over (from 15 per cent in 1983). Projections for specific UK regions have some with between 35.6 and 43.1 per cent of the population over 65, compared to between 5.6 and 13 per cent in London.[4] While these facts speak for themselves, such upsurges and regional variations between urbanised and rural areas also imply stresses on the economy, as well as on our infrastructure, welfare and services. Life expectancy has

increased with better health, and there are now many more fit and healthy older people. For market economies predicated upon continuous growth, this will require significant adjustment.[5] Any new development will need to consider not just quantity and quality, but also the future engagement of active elderly in an uncharted economy.

In the context of climate change, and energy and resource scarcity, third-age housing also needs to be more sustainable. For example, the elderly frequently need warmer internal environments, yet to avoid fuel poverty seek lower energy bills. They spend more time at home and travel less, yet decreased mobility increases transport dependency. In rural areas, individual car ownership is seen as essential, but such energy-resource dependency is strategically unsustainable. If better access, more town-centre housing and transport alternatives are available for the elderly, the high costs of individual car ownership can be avoided. Designing lifetime neighbourhoods with improved public transport networks, better pedestrian access and cycle routes, and introducing car-sharing clubs or car-call services, are therefore crucial.[6] Basic provisions such as food supply are also a risk to the elderly vulnerable, but they are particularly well placed to engage in food activism.[7]

The Greater London Authority (GLA) and UK Department of Health recently granted £300 million to this housing sector, alongside the government's introduction of a 'bedroom tax' to precipitate downsizing. Billed as an incentivising approach, this latter policy is in reality an unpopular disincentive that lacks any commensurate benefits. While 'lifetime homes' and 'lifetime neighbourhoods' concepts underpin much of the British government's current thinking about what will make the housing stock suitable for all in the longer term, existing strategies appear insufficient; current demographics mean that further reforms are required now.

In 2013, Walter Menteth Architects entered the 2013 Royal Institute of British Architects (RIBA) Re-imagine Ageing Design Competition with an entry that focused on the delivery of customised housing to suit individual specifications. Here **Walter Menteth**, a director of the practice, describes the research the office undertook as part of the project and how it led to a solution that radically questioned the current procurement process for development-led retirement housing by proposing a new, distinctively 'branded' delivery vehicle that improves access to consumers while expanding buyer choice and engagement.

Walter Menteth Wren Architects, Housing for the elderly, Bishop's Waltham, Hampshire, 2013
The permeable street, courtyard and pathway sequences, landscape and materiality of the proposal were informed by the town's existing network of streets, passageways, courtyards, fragmentary rear elevations and gardens. A covered stair lift allows access up the quarry escarpment in the southwest for both the public and residents.

Architects and policymakers need to look at these convergences in a wider context, beyond the confines of specific sites, so that more can be done strategically to ensure that rural areas in particular deliver suitably sustainable neighbourhoods for third-age housing.

The greatest shortfall of general-needs third-age housing is in the private sector, as only 5 per cent of the elderly end up in semi-independent specialised housing or care homes. However, there is a ready market of third-age equity holders looking to downsize; they are mature, sophisticated and diverse, with aspirations and a culture predisposed towards higher standards of more individually distinctive homes than previous generations.[8] If 10,000 homes a year are designed for their downsizing, and they move out of homes which typically house 15,000 people in three-, four- and five-bedroom properties, this would release much-needed family dwellings for the younger generation that could house as many as 60,000 people.

But in most areas there is simply not enough accommodation, and existing home designs are not sufficiently desirable to most third-agers in the private market to tempt them to want to downsize. Much of the UK's housing stock has limited access, unsustainably high energy demands, or is of poor quality and unsuitable for the elderly. This lack of choice and quality is a key.

Re-Imagine Ageing: A Polemic for Change
Developers McCarthy & Stone, sponsors of the RIBA Re-imagine Ageing competition, have a dominant share (70 per cent) of the UK private-sector specialist retirement market. Whilst, and albeit belatedly, the firm has recognised the need to 'provide greater choice for older people through more varied types of development',[9] a design competition can only ever be a snapshot of ideas manifest in architectural form for a specific context. In Walter Menteth Wren Architects' Bishop's Waltham proposal, however, the key issues of neighbourhood, mobility and sustainability were also explored.

Surveying untapped private demand revealed that current models are clearly inadequate. Our departing point, therefore, was to establish a framework that could be empowering for such a sophisticated clientele, delivering quality and distinction in both customised and self-build housing options to suit diverse individual specifications, and located within a mixed, mutually supportive lifetime neighbourhood development.

However, the elderly often lack the necessary support to guide them through the process of meeting their requirements and achieving their goals within group developments. As part of our proposal, the sponsors were therefore invited to radically review their procurement process via a new, distinctively 'branded' delivery vehicle that could improve access to consumers while also expanding buyer choice and engagement. Rather than continuing in their traditional role as developers, McCarthy & Stone would initiate a development support arm, specifically providing development, organisational and enabling functions customised to the needs of individual customers, while continuing to provide them with access to contracted long-term care support.

Site finding, land parcelling, acquisitions, coordination of collective services, energy and infrastructure, planning, design, and technical, financial and legal issues might all be part of the enablement and support package, depending on the degree to which individual consumers wish to be involved in the development. McCarthy & Stone's expertise, size, and the scale of their supply chain, backed by their extensive financial, care and maintenance packages, provide an opportunity to envisage the viability of them restructuring and redeploying this offering to meet more individual consumer demand.

The aim here for both the elderly and the developer is to open up new and better opportunities. By offering a desirable project, a smarter venture in which individuals have greater control of the design of their homes, the developer can attract capital investment at an earlier stage. Such an approach still draws on the developer's existing strengths and resources, but requires them to relinquish some degree of control. However, helping to positively incentivise the market and unlock private equity in this way also reduces the developer's risk and exposure, and enables them to extend their market testing.

The project design includes a terrace of nine self-build houses to the north, supplemented by customisable apartments around courtyards to the south. On completion, management of the site's communal provisions (combined heat and power plant, other energy sources, transport, landscaping, composting, maintenance etc) would be divested to a Community Land Trust (CLT), transforming residents into lifelong stakeholders in shaping the long-term sustainability of the development. This basic design structure offers an aspirational environment and framework for active and evolving third-age participation.

Connections to the town centre would be improved via new pedestrian crossings and widened access lanes, with the site itself made pedestrian permeable with public access extended through it from the main road to the north and beyond the escarpment to the south. A north-to-south hierarchy of shared circulation spaces – street, alleys, courtyards, passageways, allotments, a common, meadows and woodland paths – creates complimentary degrees of intimacy and openness for activity and interaction.

Along the perimeter, simple monopitch shelters provide parking with covered access from vehicles to front doors, or can be converted into a variety of other uses such as workshops or studios, spaces for social activities. The parking is limited in anticipation of increased adoption of shared transport, car clubs and mobility scooters.

The new street is immediately apparent from the site entrance, and defined by a shared surface, with gardens contained behind landscaped Devon banks and the Hampshire red-brick frontages of the main residences and guesthouse.

A rich mix of generously sized 'care ready' apartments is proposed that meet the Code for Sustainable Homes Level 5 and exceed the Lifetime Homes Standards criteria. These include specialised dwellings for disabled residents, guest and warden accommodation, and a minimum of two family houses within the terrace of nine self-build properties. The apartments have kitchens that open on to covered courtyards,[10] providing a convivial yet intimate sheltered environment[11] and also reducing heat loss. Two-bedroom units provide extended living space that can be used, for example, for study, or as an occasional (carer) bedroom.

Responding to the challenges now arising in UK housing will require new economic models of supply. In the case of third-age housing, it is unlikely that this can be achieved without opening up individual engagement and choice that could provide far greater local diversity and the liberation of more innovative, sensitively responsive and distinctive architectural design tailored to the needs of the occupants. ᴀᴅ

Notes
1. HAPPI was established by the Homes and Communities Agency on behalf of the Department of Health, and Department for Communities and Local Government, with a general remit to evaluate high-quality sustainable homes and neighbourhoods, with an emphasis on evaluating and proposing innovation solutions for the design of third-age housing and challenging the mainstream provision. For HAPPI's 2009 report, see: www.homesandcommunities.co.uk/housing-ageing-population-panel-innovation. For HAPPI 2012: www.housinglin.org.uk/Topics/type/resource/?cid=8650/.
2. See www.mccarthyandstone.co.uk/about-us/re-imagine-ageing/.
3. Bishop's Waltham lies 80 kilometres (50 miles) southwest of London on the River Ham. The parish has a population of 6,550 (UK 2001 Census).
4. Office for National Statistics (ONS) Population Trends 2009, table 1, p 8: www.ons.gov.uk/ons/rel/population-trends-rd/population-trends/no–138–winter-2009/population-trends.pdf; ONS Population Aging Across the UK and EU: ONS, The Ageing of the United Kingdom: 1992–2033: www.ons.gov.uk/ons/interactive/theme-pages-1-2/age-interactive-map.html.
5. See Danny Dorling, 'Generation Peak-Teen', New Statesman, 25 July 2013: www.newstatesman.com/2013/07/generation-peak-teen.

6. See 'Lifetime Homes, Lifetime Neighbourhoods: A National Strategy for Housing in an Ageing Society', Department for Communities and Local Government/Department of Health/Department for Work and Pensions, February 2008: www.cpa.org.uk/cpa/lifetimehomes.pdf.
7. See, for example, the Incredible Edible Todmorden initiative: www.incredible-edible-todmorden.co.uk/.
8. National Housing Federation, 'In Your Lifetime: A Vision of Housing, Care and Support for an Ageing Society', 20 January 2010: www.housing.org.uk/publications/browse/in-your-lifetime-a-vision-of-housing-care-and-support-for-an-ageing-society; Karen Croucher, 'Housing Choices and Aspirations in Older People: Research from the New Horizons Programme', Communities and Local Government, February 2008: www.york.ac.uk/media/chp/documents/2008/newhorizonsolderpeople.pdf.
9. Gary Day, Director of Planning, McCarthy & Stone, RIBA Competition Briefing, 2012.
10. The roof enclosure references the work of French architects Lacaton & Vassal, with graduated and/or transparent thermal shells that extend living volumes. See www.lacatonvassal.com.
11. This approach to communal space in third-age housing is illustrated in the courtyard housing of the intimately delightful and valuable exemplar of the Setchell Estate in Southwark, London, designed by Neyland & Ungless in 1977.

By offering a desirable project, a smarter venture in which individuals have greater control of the design of their homes, the developer can attract capital investment at an earlier stage.
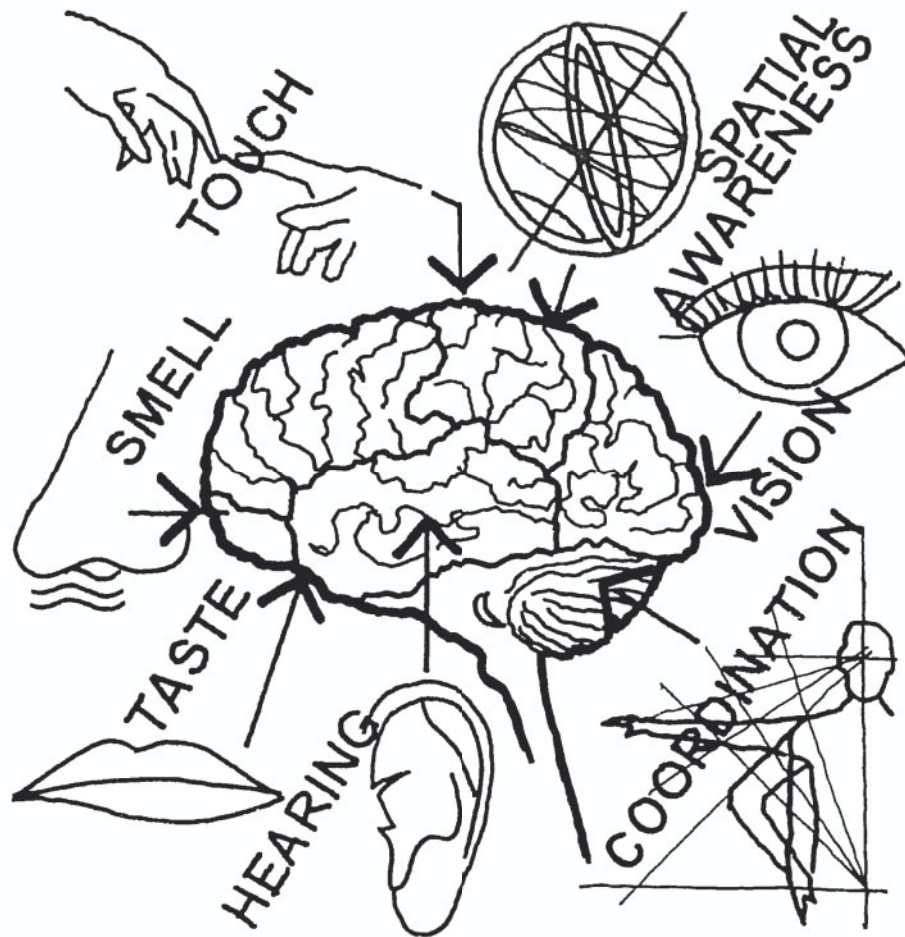
Neylan & Ungless Architects, Setchell Estate, Southwark, London, 1977
The detailing, scale and intimacy of these courtyard spaces for the elderly, in this popular innovative housing estate by Michael Neylan and Bill Ungless, are exemplary and imbue delightful conviviality.

SENSE-SENSITIVE DESIGN

FOR THE AGEING

Richard Mazuch (IBI/Nightingale), Sensory sketch
The science community informs us that there are not just five key senses, but 21 sensory receptors and more by which we engage with our environments.

When designing retirement housing and socially inclusive urban spaces, there is a great deal of emphasis on mobility and accessibility. Physical decline is, however, only one important dimension of old age. **Richard Mazuch**, Director of Design Research and Innovation for IBI/ Nightingale, an architect with specialist expertise in evidence-based design and healthcare, here describes how architects and designers need to be mindful of how the senses wane with age when designing environments for older people.

Richard Mazuch

As we age, our body, mind and physiology alter. Our sensory dialogue with the world we know and experience begins to falter and erode the quality of our lives. Designing for the aged therefore requires a fundamental understanding of the ageing senses to enable us to create quality and truly supportive salutogenic environments for tomorrow: spaces that not only prevent disease, but are designed to promote activity, good health and wellbeing.

Substantial evidence-based research can inform and empower new and elegant design interventions that can de-stress, reduce medication, improve physical and mental health, and help avoid multiple types of accidents and trauma. An example of this is the io LED lighting touch-sensitive handrail designed to help the elderly navigate frequent visits to the bathroom during the night without falling.[1]

Vision: the windows of the mind; **Hearing**: the noblest faculty; **Touch**: the confirmatory sense; **Smell**: the inarticulate sense; **Taste**: the gustatory sense.

Vision

Vision, the key ocular receptor, assimilates approximately 90 per cent of the environmental data we learn daily. With age, this ability diminishes, and ocular changes include reduced visual acuity, depth perception and sensitivity to colour/contrast, heightened sensitivity to shadow/glare, and restricted field of vision. Age-related visual deficits include macular degeneration, cataracts, glaucoma and thickening/clouding of the lens.[2]

Impairment of this primary receptor can be directly related to sleep issues (such as sleeping at inappropriate times due to reduced light penetration through the eye) and sundowning (a psychological phenomenon associated with increased confusion and restlessness in patients with some form of dementia), as well as falls, burns, difficulty in metabolising vitamins, and general mental and physical wellbeing. Innovative design interventions such as full-spectrum lighting, surface articulation furniture layout psychology, biodynamic illumination, period light intensity, sensor-responsive light-emitting handrails, colour contrast and articulation can all help to improve quality of life and avoid life-threatening events and conditions.

Hearing

The second major receptor affected by age is hearing, when the ear structure deteriorates and the eardrum thickens, reducing the ability to hear high/low frequency pitches. Age-related hearing impairment includes general deafness, tinnitus, and loss of conductive learning. It is said that noise is to people with dementia what stairs are to wheelchair users.[3]

Successful design interventions here have involved white/pink noise, noise-cancellation speaker induction loops, and new sound-absorptive fabrics and finishes. In care home settings, Condiment Junkie Ltd, a sensory branding and experiential design agency, are developing soundscapes that relax the elderly and conjure pleasant memories while not being too harsh on their hearing receptors.

Touch

This key tactile receptor, known as the 'confirmatory sense', validates the important environmental data received by the other senses. Touch offers an essential non-verbal mode of communication and navigation for those with visual and hearing impairment. Varied, contrasting and richly articulated fabrics and finishes are therefore essential in establishing legible and engaging tactile environments. Life-threatening issues related to hyper/hypothermia, due to reduced sensitivity to temperature, may also be prevented using audible/visual temperature sensors.
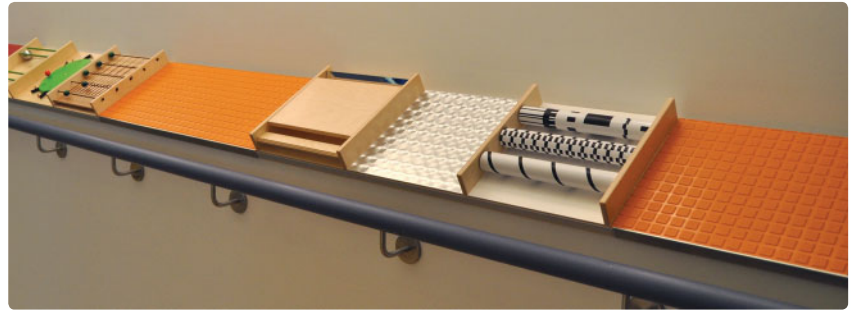

IBI/Nightingale, Sir Michael Sobell House Hospice, Oxford, 2003
The layers of natural and artificial light, use of natural materials and generous wandering routes have proven very popular with both patients and staff.

IBI/Nightingale, Marjory Warren Ward, Health and Ageing Unit, King's College Hospital, London, 2011
top: Funded by the King's Fund, the unit incorporates multi-sensory rooms and sensory wandering loops providing supportive handrails delighting in colour, texture and sound.

IBI/Nightingale, Kirkwood Hospice, Dalton, Huddersfield, West Yorkshire, 2013
above: This 16-bed inpatient unit specialises in palliative care, offering sensory supportive environments with generous views, with access to sensory-engaging landscaping from all bedrooms.

Smell

Remarkably, the sense of smell, a powerful, informative and emotionally responsive chemo-receptor, has no unit of measurement. A diminished sense of smell is often accompanied by a loss of appetite and consequent loss of weight, all of which ultimately impact on health and wellbeing. Olfactory sensitivity begins to reduce from the age of 50. Smart products have been developed to combat this issue, such as ODE, a fragrance-release system that emits food smells three times a day, helping to stimulate appetite at mealtimes.[4] Smart wall and ceiling finishes can have photo-catalytic effects, absorbing confounding noxious smells, and scent emitters can prompt past memories in cases of dementia.

Taste

Sense of smell and taste collaborate to identify food flavours and aromas. Two-thirds of our ability to taste depends on our sense of smell. Taste buds reduce from the age of 50, and stimulation from 60 onwards. Illness, medical treatment and medication can impact heavily on an ageing gustatory sense, influencing nutrition and subsequently leading to weight loss and morbidity. The newly established Dementia Cafes in Bristol and Faversham create informal meeting spaces that engage with these issues, for example with see-through kitchen/dining-room cupboards and refrigerator doors, and warm colours to awaken appetites (rather than blues, which can suppress).[5]

21 Other Senses

Beyond the five cardinal receptors, others such as the sense of pain, time, balance, space and self are all fundamental to an ageing community; a sense of time is especially important to dementia sufferers, and a sense of balance to those suffering from physical change and mobility issues such as arthritis and loss of muscle tissue. Recent scientific studies have identified 21 sensory receptors with exotic names such as thermoception, proprioception and nociception that help to redefine our sensory responsive environments for the aged.

Thoughts and Directions

A clear understanding of the ageing process, the sensory receptors, maturation of the body's systems and physiology, related medical issues and salutogenic needs should inform our approaches to tomorrow's senior-care architecture and interior design. Designers need to create innovative, elegant, dignified and exciting environments for the elderly, moving away from the mentally/visually debilitating, degraded and stigmatising institutions of the past with their usual proliferation of awkward hinged/swing metal grab bars, handrails, frames, slow-moving stairlifts and inappropriate, awkward-looking furniture and fittings. New emerging design tools such as sensory plans and spreadsheets, informed by robust evidence-based research, can help designers to achieve such pleasant, safe and supportive environments for the aged. ∆

Richard Mazuch (IBI/Nightingale), Sensory plans
Sensory plans developed by IBI/Nightingale are unique and innovative design tools that empower the designer to deliver optimal supportive environments for the ageing community.
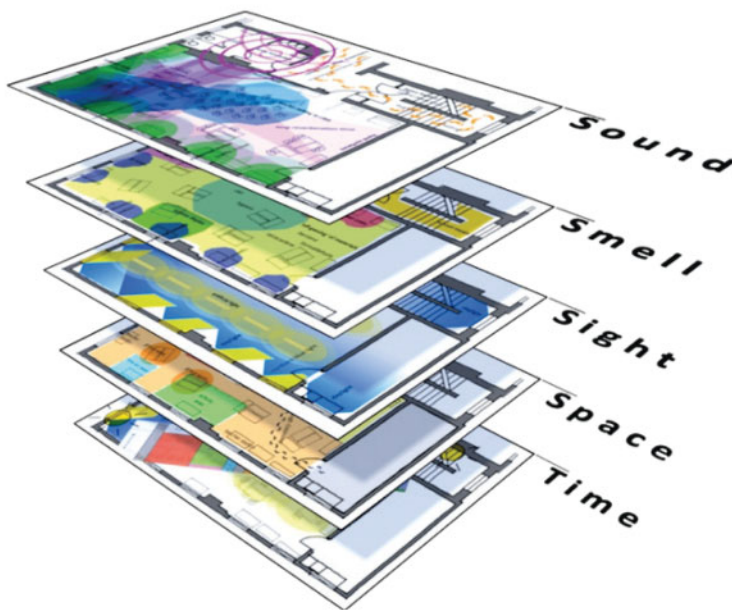
Notes
1. See www.cooperindustries.com/content/public/en/lighting/brands/io_led/balance_beam.html.
2. A Horowitz and C Stuen, 'Ageing and Vision Loss: A Critical Healthcare Issue', Homecare Council of New York City Report, 1996.
3. See S Parmet, 'Adult Hearing Loss', Journal of the American Medical Association, Vol 289, No 15, 16 April 2003, p 2020, and S Bellville, N Rouleau, M Van der Linden and E Collette, 'Effect of Manipulation and Irrelevant Noise on Working Memory Capacity of Patients with Alzheimer's Dementia', Neuropsychology, 17, 2003, pp 69–81.
4. Design Council and Department of Health, 'ODE – Appetite Stimulation by Aroma', Living Well With Dementia, 2010: http://www.designcouncil.org.uk/our-work/challenges/health/living-well-with-dementia1/solutions1/ode/.
5. Elizabeth C Brawley, 'Smell and Taste', Designing for Alzheimer's Disease: Strategies for Creating Better Care Environments, John Wiley & Sons (New York), 1997, p 11.

Lack of public funding and commercial constraints often restrict fresh thinking coming to the fore when designing housing for older people, as the potential for architects to respond innovatively in practice remains limited. In 2013, developer McCarthy & Stone and the Royal Institute of British Architects (RIBA) paired up to launch the Re-imagine Ageing design competition, which asked architects to provide visionary responses to designing proposals for a typical retirement site on a brownfield plot in Bishop's Waltham, Hampshire. Guest-Editor **Lorraine Farrelly** describes the work of the award-winners and explains how this unique chance to develop and research more far-reaching approaches to retirement housing has gone on to inform their work.

RIBA DESIGN COMPETITION 2013

NEW VISIONS RE-IMAGINE AGEING

Lorraine Farrelly

Tom Russell Architects, 'Inside Out Outside In', winning scheme for Re-imagine Ageing RIBA design competition, 2013
Cross-section through a flexible open-plan living space.

To respond to the challenges of designing new environments for active agers, more far-reaching creative solutions and proposals are needed from architects and designers. Architects need not only encouragement, but also the right opportunities to research housing and deliver innovative solutions for living spaces. This article considers some housing projects developed for the elderly in response to the Royal Institute of British Architects (RIBA) Re-imagine Ageing design competition, a two-stage open competition first launched in November 2012 as a partnership between the UK retirement developer McCarthy & Stone and RIBA Competitions.

In the UK, housing for the elderly community needs to be as varied as possible to cater for the diverse needs and lifestyles of its 12.2 million pensioners.[1] Though the UK might be the world's sixth largest economy, 18 per cent of over-60s in the UK remain in fuel poverty. This same extreme picture translates into housing: where 76 per cent of older householders are owner-occupiers, but older people are also more likely than younger people to live in social housing.[2]

The Competition Brief

The Re-imagine Ageing competition offered a unique space for the developer and the RIBA to encourage some fresh thinking. McCarthy & Stone is well established in the UK as a provider of housing solutions for elderly people, from assisted living, which involves care, to later living that offers some support around the home with purpose-designed apartments. For McCarthy & Stone, a design competition was an important opportunity to solicit new ideas from design practice and to introduce 'inventiveness and flair' to homes for a discerning generation of baby boomers;[3] the competition was open to registered architects in both the UK and the Republic of Ireland. The RIBA had also identified a need for better homes for 'a growing and ageing population' through its Future Homes Commission, which launched a year-long independent inquiry in September 2011, publishing its findings in its 'Building the Homes and Communities Britain Needs' report in October 2012.[4] It highlighted that the proportion of people over 65 is projected to increase from 17 per cent of the UK population in 2010, to 23 per cent in 2035.[5] It emphasised that house builders need to respond to consumers' expectations, and that the ageing population expects adaptable housing that can change as their needs shift. Housing solutions are required that meet current needs, but also those of future generations.

The competition brief 'Re-imagine Ageing: Finding the Baby Boom Generation a Design for Later Life' clearly stated its intention 'to attract submissions from established and emerging design talent for a visionary development of privately owned dwellings that will combine innovation with sustainability.'[6] It stressed that the needs and desires of this group should be specifically targeted: 'The design should reflect the differing aspirations, lifestyles and practical requirements of this generation as they move into later life. The aim is to design a realistic and affordable property product that will appeal to this group in terms of design, location, space, features and facilities.'[7] Contestants were asked to design their project for a fairly typical but attractive retirement site, a 1.14-hectare (2.83-acre)

brownfield plot in the Hampshire town of Bishop's Waltham, just 200 metres (650 feet) from the town centre.

There was a strong response to the first stage of the competition, with 118 entries. When the shortlist was announced in February 2013, the judging panel described the entries overall as demonstrating a great deal of 'creativity and pragmatism' in their approach.[8] The five practices selected on to the shortlist came from across the UK: AU Studio, London; Inglis Badrashi Loddo Architects (IBLA), London; Living Space Architects with Hilary Lawson, Exeter; waparchitects, Sheffield; and Tom Russell Architects, Bristol. At this second stage, in line with feedback from the judging panel, the shortlisted architects were required to work up a more detailed design, cost analysis and proposals for the procurement of the development; their efforts were also supported with an honorarium. In July 2013, Tom Russell Architects was announced as the winner.[9]

Featured here are three of the five shortlisted projects, including that of Tom Russell Architects. The three schemes have been chosen for their quite different approaches. Though they are all characterised by open-plan and flexible living spaces, Tom Russell's design places an emphasis on simultaneously embracing the occupiers' individuality and the creation of shared social spaces, encouraging cross-generational interaction across the wider community; IBLA's approach highlights the relationship between the landscape and garden, where views and access to outdoor space are inherent to the provision of quality living spaces; and Living Space Architects' low-density scheme suggests a community that can adapt as people age, relating strongly to the landscape with gardens providing an important amenity with a social function.

Tom Russell Architects: 'Inside Out Outside In'

Tom Russell's winning scheme effectively addressed McCartney & Stone's research, which highlighted that while older people are keen to downsize in order to release capital, they are hesitant about the sacrifices that this will require in terms of the lifestyle that a larger property, such as a family home, might afford.[10] Each apartment provides adequate space for entertaining and having friends and family to stay, with two bedrooms and two bathrooms. A sense of individuality is also maintained by making each unit dual aspect with a private external space: the ground-floor apartments have courtyard gardens and those on the first floor have a raised external area and balcony. Robert Sakula of Ash Sakula Architects, who was chair of the RIBA judging panel made up of internal and external experts, commented on how the treatment of circulation and outside space in Russell's scheme marked it out: 'A special trick was to pull the walkway away from the fronts of the upper units, creating a small external approach space in between which creates crucial privacy for occupiers.'[11] This need to balance the private and public was considered throughout. The apartments are set in shared grounds with a clubhouse, which encourages group activities and gives the wider community the opportunity to come together for special events.

By going beyond current housing provision for the elderly, Russell's concept embraced the principles recommended in the

Housing our Ageing Population: Panel for Innovation (HAPPI) report, published in 2009. The competition's judging panel was 'impressed that the conceptual design-led properties offered a shared purpose through providing the greater sense of space, light and accessibility that had been recommended by HAPPI'.[12] The submission also set out a sustainable strategy for energy use, water consumption and surface water run-off.

For architect Tom Russell, entering the competition has been beneficial to the development of his design work and his practice.[13] Since winning in the summer of 2013, he has been working with McCarthy & Stone to develop a new approach to age-specific housing that moves away from all associations with institutional care. The designs that they have developed together focus on providing apartments for independent living with generous space standards, good light and views, and private gardens. They have reconsidered ideas of corridor access for living spaces and ensured that all apartments are double aspect. The units are all two- or three-bedroom apartments with space to entertain and have guests. They have been designed to provide flexible layouts that can be adapted to meet the preferences and needs of a variety of occupants. Each unit can be configured either with an open-plan kitchen/living space or with an enclosed separate kitchen with its own window. Differentiation between the various living units has also been considered. Top-floor flats have double-height top-lit living spaces, and ground-floor units have generous private gardens.

A planning application for the first development of this new housing type was submitted in October 2013.

The competition brief 'Re-imagine Ageing: Finding the Baby Boom Generation a Design for Later Life' clearly stated its intention 'to attract submissions from established and emerging design talent for a visionary development of privately owned dwellings that will combine innovation with sustainability.'

Tom Russell Architects, 'Inside Out Outside In', winning scheme for Re-imagine Ageing RIBA design competition, 2013
The site plan for the competition shows that all of the properties have garden access and open views with lots of social space in a communal courtyard both inside and outside.
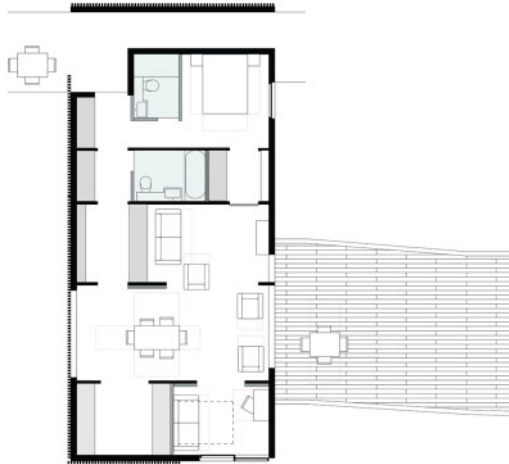
Inglis Badrashi Loddo Architects (IBLA): A Sylvan Scheme

In their proposal, IBLA introduced two dwelling types, a tree house and courtyard house. The overall concept was to combine a private (external) space in the woods with more sociable spaces that offer residents the opportunity to develop relationships with neighbours. The intention was to create a civilised retreat, supported by social spaces and the convenience of parking. There are communal shared spaces on the ground level, but also a higher level of connected roof gardens as part of a set of elevated tree houses. A proposed set of facilities for a range of outdoor activities such as barbeque pits, boules courts, outdoor chess tables, greenhouses, beehives and a bird hide encourage new friendships and connections to the community, and engagement with the concept of outdoor living. The project responds to the proposed competition site by providing the visual backdrop of the treetop view of the nearby Bishop's Waltham Palace ruins. The concept is that the buildings and landscape interlock together both visually and experientially.

The overall concept was to combine a private (external) space in the woods with more sociable spaces that offer residents the opportunity to develop relationships with neighbours.

In this low-density housing solution, the properties are very much part of the green landscape.

A strong community is often the key to the happiness
and wellbeing of individuals. When people retire,
downsize and move, they are often reluctant to leave
behind friends and familiar places.

GARDEN FLAT - BACK GATE   ENTRANCE

Living Space Architects with Hilary Lawson: Creating a Strong Integrated Community

A strong community is often the key to the happiness and wellbeing of individuals. When people retire, downsize and move, they are often reluctant to leave behind friends and familiar places. Living Space Architects were keen to explore not only how this potential alienation might be counteracted in their competition entry, but also how a new sense of community might be engendered. The residents are encouraged to come together through the creation of social spaces that inspire a sense of familiarity. Extra consideration is given to the shared open and social spaces. In order to prompt a wider sense of belonging, public places need to function across the community as a whole. This is developed through informal spaces, such as an open square, that offer a chance for those living on- and off-site to meet, socialise and connect. Gardens also provide spaces for recreation and relaxation that can be shared with visiting friends and families.

The scheme has an identity that is distinct while being open and inclusive; it has to be somewhere that all the residents feel that they can belong. A sense of attachment to the locality is created through the scheme's relationship with the landscape and the provision of a curved terrace: the topography of the sloping site is used to connect the houses, taking advantage of views across the nearby town and countryside. The ever-changing views provide a unique aspect for every home. For the older generation, memory is very important. Here design is used to evoke a sense of place encouraging appropriation and security.

TO FIRST FLR FLAT   GARDEN FLAT

For Living Space Architects the experience of being shortlisted and having the opportunity to develop their scheme further has been entirely positive, as highlighted by Director Kirsty Curnow Bayley.[14] Building on the research around this project, they have met with several other house builders who are interested in how they could develop their own housing offering for older people. They are also in discussions with McCarthy & Stone who are looking at developing their proposals further on other sites. The opportunity of researching an area of design more thoroughly afforded by this competition has effectively enabled the architects to transfer their ideas to both private housing projects and larger commercial designs.

Real Schemes for Real People

The Re-imagine Ageing shortlisted schemes here are all characterised by a sensitive response to a real site, but also to the residents as real people who aspire to be part of a community, a place and a landscape. The projects demonstrate an empathy with the needs of people as they grow older by treating them as individuals with a future and a set of dreams.

The competition also highlighted the arrival of a watershed moment for the design and development of housing in the UK by its focus on the baby boomers – never has there been potentially a larger or more discerning generation of older people. With the announcement of the competition winner, both Tom Russell and McCarthy & Stone Executive Director Ali Crossley commented on the opportunity that the competition presented to respond to this new generational shift and to develop new types of housing.[15] Robert Sakula, chair of the judging panel, who was also part of the judging team for the *AD* student competition (see pp 126–35), has also observed how significant it was to see the many different and shared routes that entrants took when going beyond accommodation, in their treatment of outside space, public and private areas and links with the community. For Sakula, though, Tom Russell's proposal was marked out by his understanding that housing now has to be designed for 'precisely the kind of people who can't quite see themselves living in a retirement village'. His solution created 'a real identity to the individual homes, without sacrificing an appropriate sense of community' and afforded 'their occupants a dignified progression from the active to less active'.[16]

This long section drawing through the site shows the opportunity for residents to connect with each other, as well as with the landscape and view.

By challenging concepts around housing for the elderly and exploring the possibilities for new types of communities and new places to live, the competition was devised to open up choices for people as they age. It is clear that there is no single solution: different people want different spaces and places to live, depending on their financial circumstances and lifestyle choices. It is also apparent since the competition that this process has had an impact on the architects involved. It has challenged their practice particularly around designing and building a sustainable community. There are already schemes now in progress that will offer new paradigms for living not just for ageing populations, but for the intergenerational community of the future.[17] ⚟

Notes
1. 'Ageing, longevity and demographic change: A Factpack of statistics from the International Longevity Centre-UK', 22 July 2013: www.ilcuk.org.uk/index.php/publications/publication_details/ageing_longevity_and_demographic_change_a_factpack_of_statistics_from_the_i.
2. Ibid.
3. See competition terms and conditions: www.mccarthyandstone.co.uk/about-us/re-imagine-ageing/competition-terms-and-conditions/.
4. The Future Homes Commission (Sir John Banham, Roger Graef, Kate Faulkner and Dame Mavis McDonald), 'Building the Homes and Communities Britain Needs', Royal Institute of British Architects (RIBA), October 2012: www.architecture.com/HomeWise/News/FutureHomesCommission.aspx.
5. Ibid, p 40. Drawn from National Statistics based on the Office for National Statistics (ONS) principal population projection 2011.
6. For a link to a pdf of the competition brief see: www.mccarthyandstone.co.uk/about-us/re-imagine-ageing/competition-terms-and-conditions/.
7. Ibid.
8. See the RIBA press release, 'Shortlist announced for McCarthy & Stone Re-imagine Ageing Competition', 28 February 2013: www.architecture.com/NewsAndPress/News/CompetitionNews/Press/Ongoing/2013/McCarthyStone.aspx.
9. RIBA press release, 'Re-imagine Ageing Design Competition – Winner announced', 10 June 2013: www.architecture.com/NewsAndPress/News/CompetitionNews/Press/Results/2013/Re-imagineAgeing.aspx.
10. Ibid.
11. Comments from Robert Sakula provided to the author in a telephone conversation and by email in October 2013.
12. RIBA press release, 10 June 2013, op cit. For the 2009 HAPPI report by the Homes and Communities Agency, see: www.homesandcommunities.co.uk/housing-ageing-population-panel-innovation.
13. Comments from Tom Russell provided to the author by email in October 2013.
14. Comments from Kirsty Curnow Bayley provided to the author by email in October 2013.
15. For quote from Tom Russell see McCarthy & Stone's press release: 'The Finalists of the McCarthy & Stone RIBA Re-imagine Ageing Competition': www.mccarthyandstone.co.uk/about-us/re-imagine-ageing/how-to-register/. For quote from Ali Crossley see RIBA press release, 10 June 2013, op cit.
16. Comments from Robert Sakula provided to the author in a telephone conversation and by email in October 2013.
17. For further research on the intergeneration community, see, for example, that by Professor Penny Curtis, Dr Katie Ellis, Dr Joanne Britton and Professor Allison James of the University of Sheffield at: www.sheffield.ac.uk/polopoly_fs/1.216197!/file/Intergenerational_Relations.pdf.

WANTED: CHALLENGING DESIGN IDEAS FOR AGEING

In 2012–13, the Design Research Institute (DRI) at the RMIT University in Melbourne hosted a Design Challenge on ageing. For the institute, which is based around trans-disciplinary design research, the challenge provides a unique opportunity to introduce a rigorous framework and focus to its activities. **Katherine Wilkinson**, the Senior Manager of the DRI and initiator of the annual Design Challenge, describes how students, designers and experts from industry, business and the community were brought together by the issue of ageing to generate innovative ideas and solutions.

Katherine Wilkinson

Each year the RMIT University Design Research Institute (DRI) hosts a Design Challenge that focuses on a different real, large and pressing set of issues that are too complex to be solved by one discipline or particular expertise. In response to the tragic bushfire events of January 2009, this was Fire; in 2010, Crime; in 2011, Homelessness; and in 2012–13 it was Ageing.

The Design Challenge invites researchers, students, designers and experts from industry, business and the community to form collaborative teams and generate innovative ideas. The key requirement is for academia and industry or the public sector to partner in the development, each contributing from their individual perspective and knowledge base. This is not one in the service of the other, but a conversation that starts early in the process and delivers surprising and exciting results.

A primer symposium with key speakers from medicine, product manufacturing, residential care and government policy launched the call for entries and the debate around the issues raised by the Design Challenge: Ageing, including who has authority to design for the over-60s.

The research project ideas were then judged in a two-stage process by an expert panel including Brandon Gien from Good Design Australia; Mat Hunter from the UK Design Council; Bruce Judd, Professor of Architecture and Design at the University of New South Wales; Professor Julie Byles of the Research Centre for Gender, Health and Ageing at the University of Newcastle; Peter Johnstone of National Seniors Australia; Linda Weatherson, City of Melbourne; and David Napier from Digital Harbour.

Submissions were evaluated against the criteria of creative design innovation, impact and effectiveness, practicality and application, team transdisciplinarity, and design research development. Selected finalists progressed to the Awards stage with the guidance of a jury report and masterclass by Rama Gheerawo of the Age & Ability Research Lab, part of the Royal College of Art's Helen Hamlyn Centre for Design.

Improving the Lives of an Ageing Population

The projects of the six finalists included a communication tool, building, business and urban planning models, mobility aids and a therapeutic wearable accessory that brought together the teams' varied disciplines: textiles, new media, architecture, industrial design and business.

The winning project, On My Life, was a collaboration between Associate Professor Susan Feldman, Director of the Healthy Ageing Research Unit at Monash University; digital designers Gene Bawden and Cameron Rose of Monash; and Reuben Stanton, a PhD candidate at RMIT University, partnered with the State Library of Victoria and a residential facility. Their online repository for photographs, documents and memorabilia enables care residents with little experience of using the Internet to easily and intuitively build, store and share their histories with staff and family.

Of the other finalists, Lara Calder of Calder Flower Architects, aged care management specialist Geoff Flower and project engineer Rob Caslick joined RMIT's Associate Professor of Social Work Jenny Martin on the A Purposeful Future project. Their proposal overlays two business models, a retirement village and a micro industry (in this instance a vineyard), with an innovative communications infrastructure and community engagement to increase local integration and value.

Design Challenge: Ageing exhibition, Sean Godsell RMIT Design Hub, Melbourne, 2013
The public siting of the award exhibition continued the Design Challenge's aim to provide access to both invited and incidental academic, industry and community visitors.

The Rehousing Nonna project built on current market research by Moreland City Council urban designer Naomi Barun and colleagues around the needs of older female homeowners. With architect Stuart Harrison of Harrison & White Sustainable Urban Design and Architecture, structural engineer Caroline Larcher and an advisor on affordable housing, the team developed an alternative business and planning model to assist these women in downsizing while retaining their independence and gaining a small profit.

Architecture and Innovating Residential Care for the Aged

Though architectural design was not at the forefront of the proposals received, it was, however, a key aspect in the two entries with team members from the professional practices Calder Flower Architects and Harrison & White that focused mainly on developing innovation in their urban planning and business models. Equally, more submissions were generated from industrial and communication design students who are exposed to 'inclusive design' than from architecture students. This may reflect the low level of engagement by leading innovative architectural and interiors practices with the issues involved in designing for an ageing Australian population. Comparatively less attractive budgets than those for hospitals and schools, and the cost constraint models that form the briefs and stifle design innovation, contribute to this, as does the focus on designing for now instead of planning for the future.

Cameron Rose, Gene Bawden, Susan Feldmen and Reuben Stanton, On My Life, 2012–13
below: Sample web page from the On My Life proposal, winner of the Design Challenge: Ageing Award. The interactive online tool for building a repository of identity, memories and history is also a conduit for care staff and families to help aged care residents build and share their stories.

Harrison & White Sustainable Urban Design and Architecture, Rehousing Nonna, Fawkner, Melbourne, 2012–13
opposite right: The four-unit dwelling design informs a hybrid business and urban planning model for a suburban Melbourne council to provide four elderly women with the benefits of independent living and the sociability and service delivery of a mini retirement village in one development within their own neighbourhood.
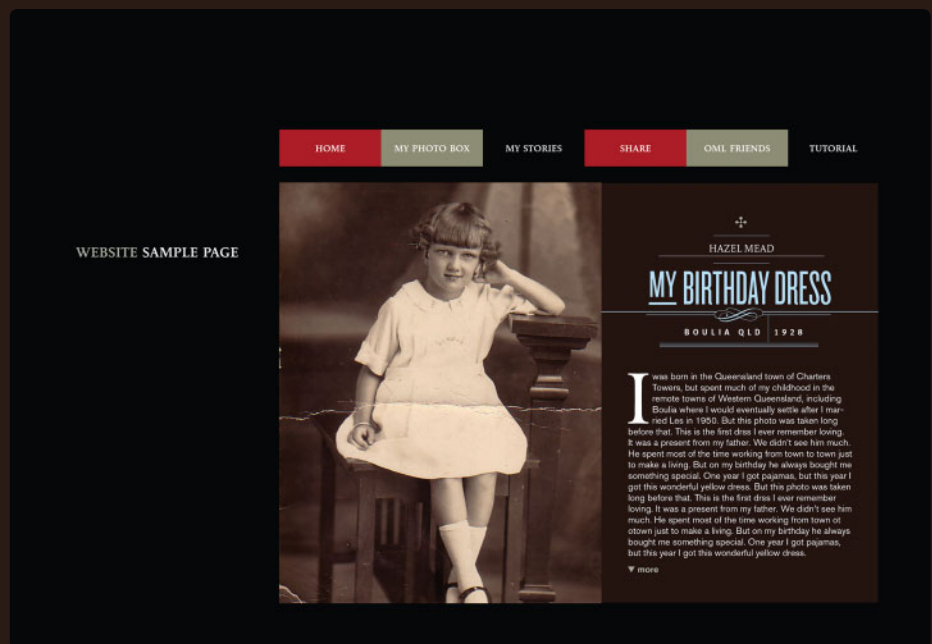
WEBSITE **SAMPLE PAGE**

Through the Design Challenge, new discipline languages are learned, new ways of working evolve, real-life and industry constraints tether idle speculation and push innovation further, and real 'design thinking' creates future scenarios and options for testing.

Calder Flower Architects and Bankstown City Aged Care, A Purposeful Future, Yallambee Village, Bankstown, Sydney, 2012–13

top left: Lara Calder's starting point for the A Purposeful Future submission, a finalist in the Design Challenge: Ageing competition, came from the Yallambee Village and other residential aged-care projects. The blurring of indoor/outdoor living spaces of those projects is taken further in this proposal, which suggests residents work outside in their co-located micro industry, increasing their mental and physical wellbeing.

bottom left: In contrast to the trend for a resort-style model of retirement and aged-care villages providing entertainment, this project explores the role of social enterprise in a sustainable and productive living model for older people.

Collaboration Brings Change and Value

Through the Design Challenge, new discipline languages are learned, new ways of working evolve, real-life and industry constraints tether idle speculation and push innovation further, and real 'design thinking' creates future scenarios and options for testing.

Past Design Challenges have proved that good seeded ideas do progress and are successful. The winner and selected finalists have the opportunity to pitch their proposals to the DRI research leaders and industry advisors to attract partners, funding and alignment to the programmes of the DRI and other research institutes. For early-career researchers in particular, the opportunity of joining a team with such senior members, as well as the submission and exhibition, are a valuable experience.

Continuing Design Challenge: Ageing projects will find opportunities to bring design to the fore, working collaboratively with other experts as agents of future social, economic and cultural change and value. ∆
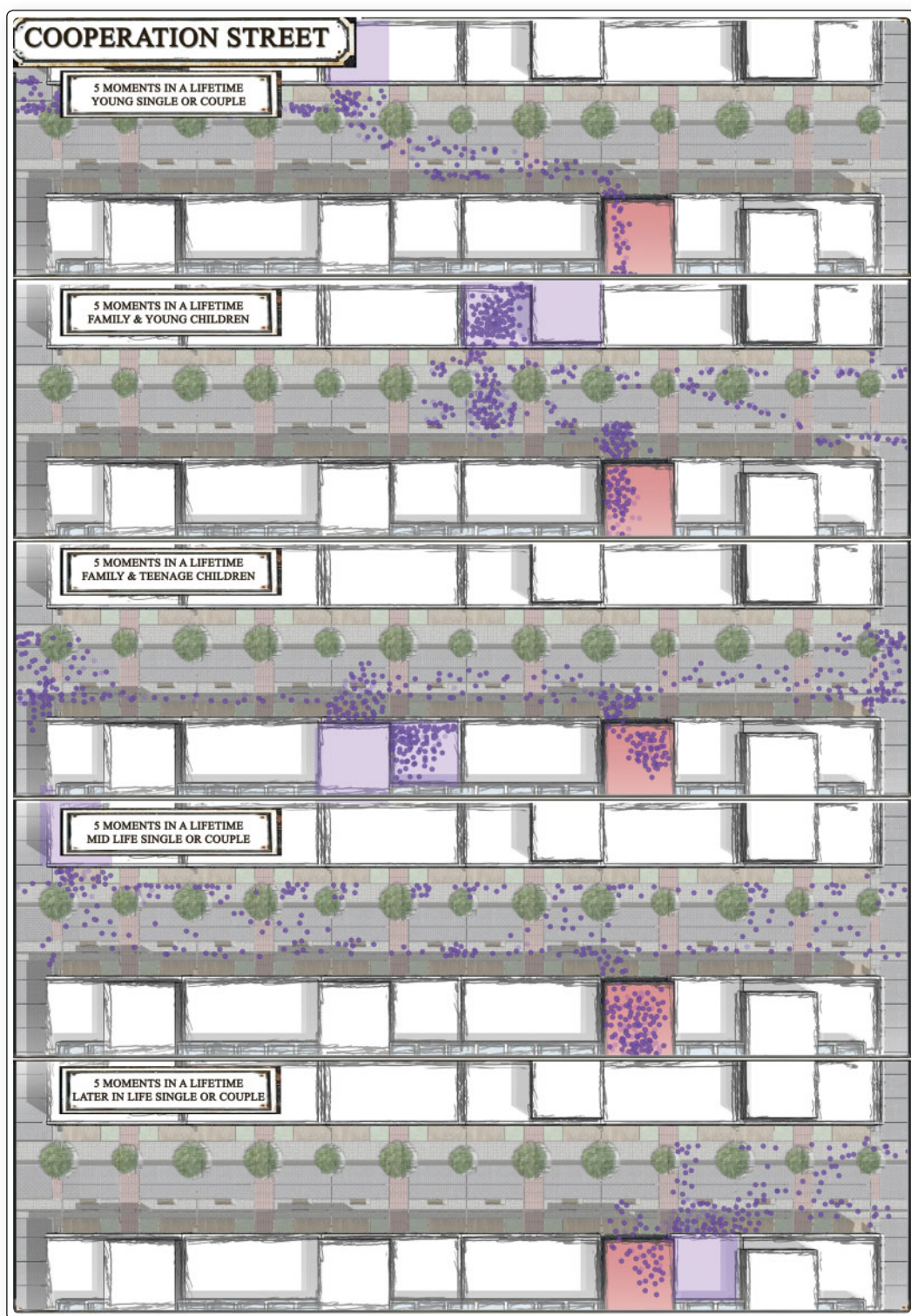
HOUSING FROM 8 TO 80

*Joint
1st place*
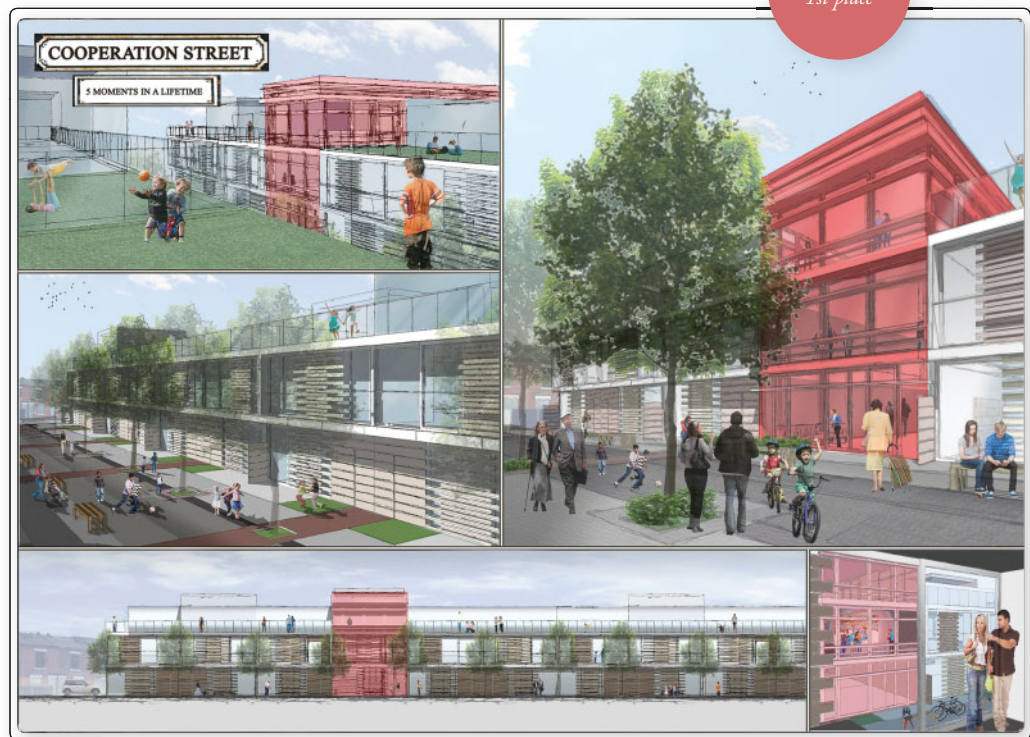
**Marco Possos and Mimi Kwan (Leeds Metropolitan University),
Cooperation Street – joint 1st place**
This scheme looks at the concept of cross-generational housing, encouraging the community to work and live together. A common building provides a launderette (top right) and a shared multimedia room (bottom right), as well as flexible space that can be used for temporary accommodation or offices (bottom left). The street is a safe area for play and leisure activities (centre left), and each first-floor dwelling also has its own private rooftop garden (top left).

COOPERATION STREET

5 MOMENTS IN A LIFETIME
YOUNG SINGLE OR COUPLE

5 MOMENTS IN A LIFETIME
FAMILY & YOUNG CHILDREN

5 MOMENTS IN A LIFETIME
FAMILY & TEENAGE CHILDREN

5 MOMENTS IN A LIFETIME
MID LIFE SINGLE OR COUPLE

5 MOMENTS IN A LIFETIME
LATER IN LIFE SINGLE OR COUPLE

The layout of the street indicates that the community is integrated, looking after itself. The public space is part of the concept of this community being effective. Here, the dwelling space for each life phase is shaded mauve, and the common building is shaded orange, with dark mauve dots indicating circulation patterns.

For this issue, Guest-Editor **Lorraine Farrelly** and ⌀ launched a student design competition around the concept of the 'lifetime home', which was open to undergraduate and graduate students of architecture, interior design and related subjects. Here Farrelly provides an overview of the competition and the ideas and designs from the award-winning entries that came from students from across the globe.

Joint 1st place

Liam Whitfield (University of Portsmouth), Mood Wall House – joint 1st place
The concept of the mood wall is to use technology that can be placed in any home, new or old, and can adapt as the user's needs change. It is shown here serving an entertainment function.

When seeking visionary ideas in a given field, it can be useful to ask those newest to the related professions for their perspective. With this in mind, I launched an international competition with Δ in early July 2013, with a submission date of mid-October 2013, aiming to stimulate students to think creatively about how dwelling spaces might adapt to the changing needs and expectations of society, in particular with regard to 'third-age' living. Titled 'Housing from 8 to 80',[1] it encouraged them to develop the concept of the 'lifetime home',[1] accommodating all phases of life from childhood to old age.

The competition was open to all undergraduate and postgraduate students of architecture, interior design and related subjects, with no more than two people allowed to submit jointly. It attracted entries from students in over 30 institutes or universities in 11 countries: from Denmark, England, France, Ireland and Scotland in Europe, to Bangladesh, China, Malaysia, Ethiopia, India and Vietnam further afield. This international scope enabled the cultural issues that surround ageing to be represented from a global perspective. The judging panel included Helen Castle, Editor

of Δ; practising architects Robert Sakula of Ash Sakula and Ian Deans of Architecture PLB, both specialists in the design of community housing; and Colin Tedder, technical director of Bouygues Construction UK. In addition to having their projects published in this volume of Δ, the winners have been invited to discuss the implications and possibilities of their proposals with Bouygues Construction's research and development team in the company's Paris headquarters, known for its research on and support of innovation in housing and construction. In this way, their ideas may inform thinking about new housing paradigms for generations to come.

The Competition Brief: Age-Responsive Housing
Can visionary architectural solutions for urban living successfully accommodate the world's ageing population, reducing models of dependency for care and transport and creating opportunities for recreation, leisure and work? And how might independent living be encouraged for all cultural and demographic groups? These problems need to be considered at the strategic level of the city, through the provision of adaptable sustainable environments. However,
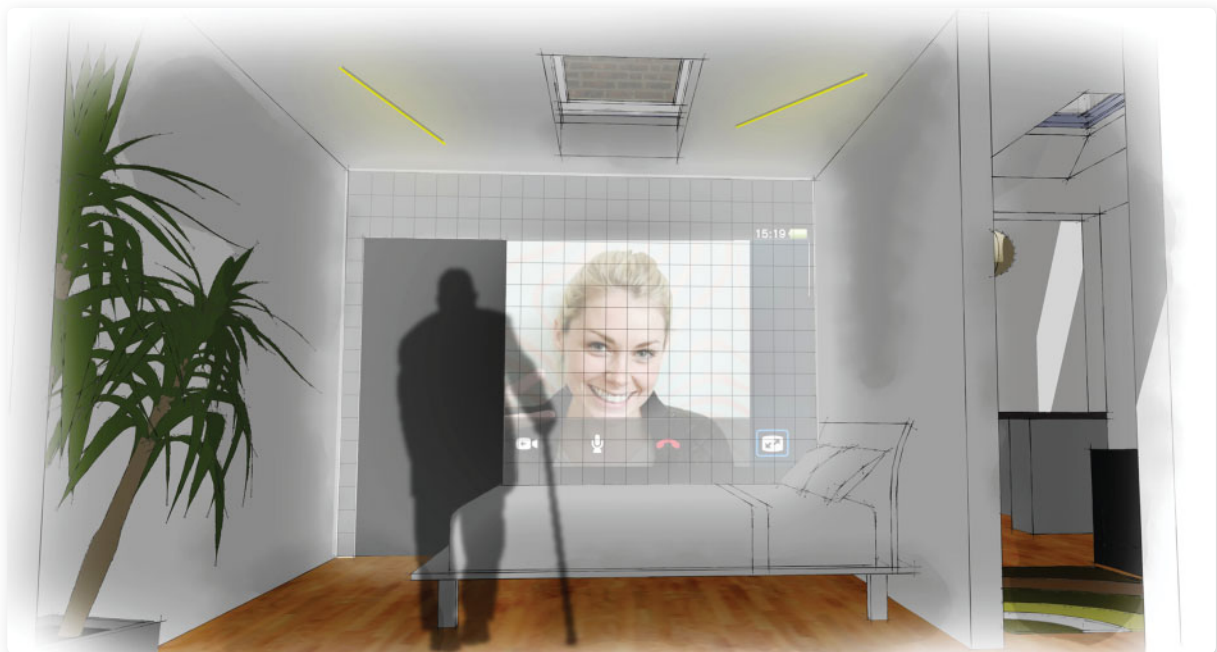
The technology can also provide information for the elderly and act as a communication device. It builds on existing communication concepts such as social media – Facebook and Skype.

they must equally be considered at the scale of the individual, with innovative responses to interior planning, and even furniture design. The need is for flexible architectural solutions that consider the relationship of the home to our changing expectations for living spaces and to each individual's lifetime narrative.

The key considerations of the competition brief were, therefore, responsiveness and emerging housing typologies. How can our existing housing typologies undergo adjustment as people's lives change? Do we need new typologies to offer new spaces to live in?

To respond to these changing contexts for living, students were invited to consider five 'moments' in the lifetime of the home: young single or couple occupancy; a family with young children; a family with teenage children; a mid-life single or couple; and a later-life single or couple. They were asked to frame these five 'moments' as a series of A3 storyboards with freehand, CAD or hybrid images that might include maps, plans, elevations, perspectives, sketches, models, paintings, drawings and/or collage. These were to be accompanied by a brief written explanation (no more than 400 words) of

> How can our existing housing typologies undergo adjustment as people's lives change?
> Do we need new typologies to offer new spaces to live in?

Runner-up

Amy Featherstone and Robyn Holden (Leeds Metropolitan University), Platt Paket – joint runner-up
The concept of an 'IKEA'-inspired community, made from flat-pack modular construction.

the proposed concept. There was no requirement for the projects to be connected to specific sites, and they could relate to one dwelling over time, to a collection of dwellings or to a community.

The entries were assessed against four criteria. The first of these was how the proposals accommodated a variety of changes over time. Secondly, they were examined for innovative solutions for new ways of living. Thirdly, their design quality was judged in terms of inventiveness and flair. A final aspect for assessment was the clarity of presentation and communication of the idea.

The Response to the Brief

All the judges appreciated the broad range of work that was submitted.[2] The projects offered some highly creative solutions, and there was rich variety both in their graphic and visual presentation and in terms of their conceptual approaches, as reflected by Helen Castle's comments: 'The competition could not have been more diverse in its design responses: from the visionary and biomorphic to the pragmatic with the adaptation of terraced housing and specific buildings and some interesting

modular/kit proposals. Entrants applied a whole palette of features and devices to ensure adaptability: modular segments, shipping containers, prefabrication, bi-fold and folding doors, flexible furniture on pulleys and permeable walls. They also grasped the importance for young and old of letting the outside in and included green walls, balconies, rooftop gardens and courtyard spaces in their designs.' There was, though, a suggestion from Robert Sakula – whose experience in this field extends to chairing the RIBA judging panel for the Re-imagine Ageing RIBA design competition 2013 (see pp 112–21) – that students did not go far enough in looking below the surface at 'the implications of their design strategies on the users of their spaces'; but their responses were successful in challenging ideas on building techniques, and on the design of internal and external spaces and communities.

Some schemes suggested new approaches to the concept of the integrated community, focusing on the community itself, the people and their social spaces, and how they might adapt to a 'lifetime' concept. As Ian Deans stated, the submissions 'showed a good understanding of the issues facing multi-generational housing and the challenges that face us as
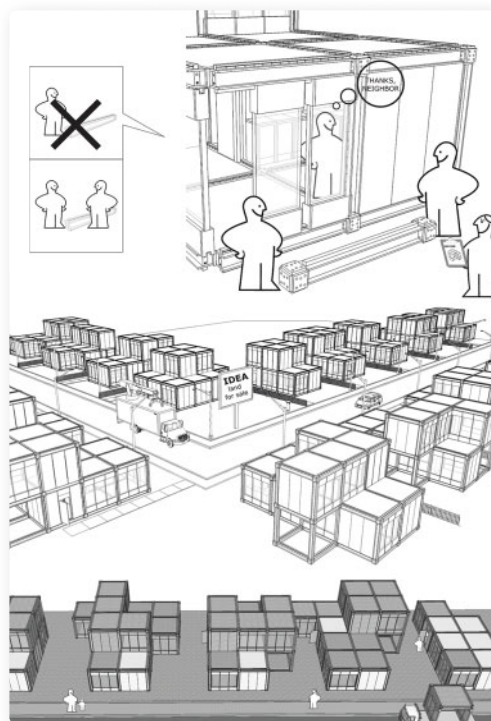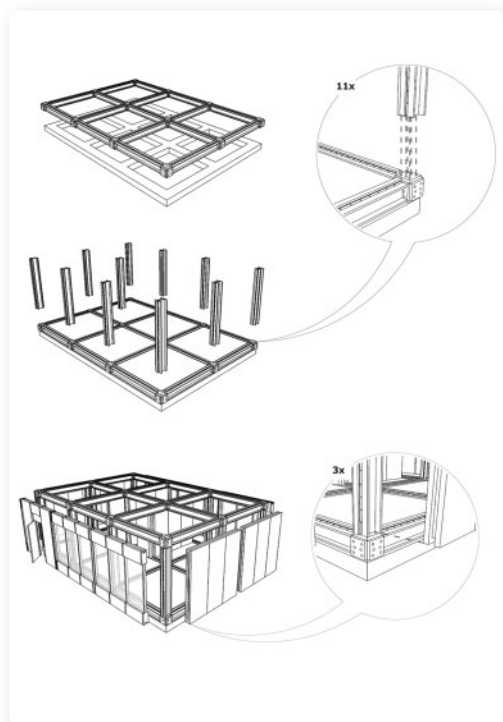
This image shows the construction techniques, where the community build the homes together.
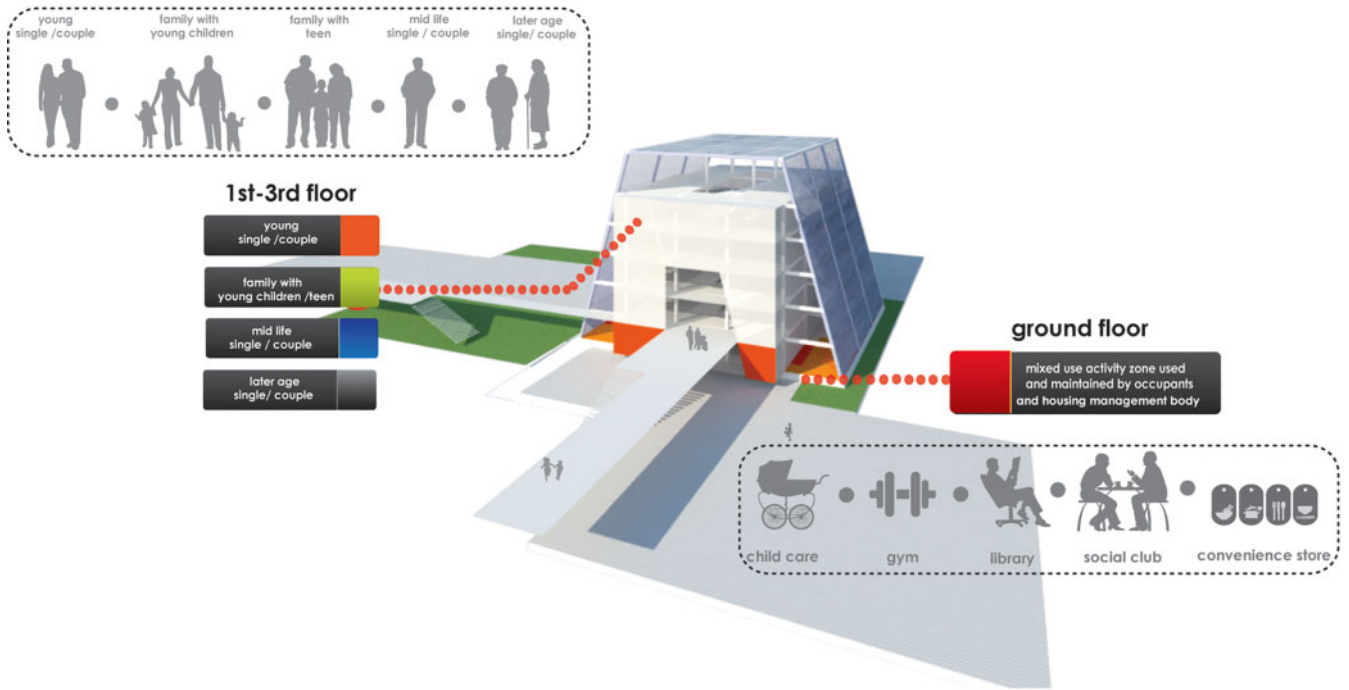
Srijon Barua and Samain Sabrin (Bangladesh University of Engineering and Technology), neighbor.HOOD – joint runner-up
top: This scheme shows how the ground floor will have social spaces with other living spaces above. The entrance ramp is intended as a nostalgic 'memory lane', to enhance the sense of belonging for all ages.

bottom: This scheme looks at the integrated community and aspects of modular construction to achieve a new living environment. The structural system is named 'dom-ino 2.014', an adaptive re-imagining of Le Corbusier's 'Dom-ino' system of 1914.

population increases with demographic change and land/energy become less available. The students tackled these with a wide variety of solutions ranging from the urban to personal scale.' All the judges considered this to be a difficult social topic for students.

Many of the schemes highlighted the issue of making housing affordable. Another key matter of concern was energy use, and how a living space may adapt over time in this respect. Colin Tedder was also impressed by the way that 'technology was employed in interesting ways to support new living situations and lifestyles'.

The two winning schemes are representative of the overall diversity of the entries. 'Cooperation Street', by Marco Possos and Mimi Kwan, who are first-year students in the Masters of Architecture programme at Leeds Metropolitan University, takes the issue of housing and ageing to the scale of the street/ neighbourhood, placing an emphasis on the community. Young and later-life singles and couples are accommodated in one-bedroom ground-floor flats, some with semi-private outdoor spaces; while larger dwellings are provided at first floor for families with children and mid-life couples, each with its own

private roof garden. A common building on the other side of the street houses a multimedia space, a launderette, a childcare meeting point, a games room where teenagers can gather to develop a sense of freedom and independence while still in reach of their parents, offices where residents can have the sense of working 'from home', and flexible temporary accommodation for visitors. The entire community benefits from the street space between the two blocks, where pedestrians are given the priority, and benches and trees create a relaxing environment. The project illustrations focused largely on the elevation; the judges remarked that it would be interesting to see how the scheme evolved when developed beyond this into the plan and section.

The other joint winner of the competition, Liam Whitfield, who is a first-year student in the Masters of Architecture programme at the University of Portsmouth, uses technology in his 'Mood Wall House' to adapt existing housing stock for a developing lifestyle, keeping in mind the inclination for people to want to stay in their own home as they age. It demonstrates a good understanding of UK housing typologies and legislation, noting the possibilities offered by government initiatives such as 'Green Deal' grants for improving buildings' thermal properties and the 'rent-a-room'

Runner-up
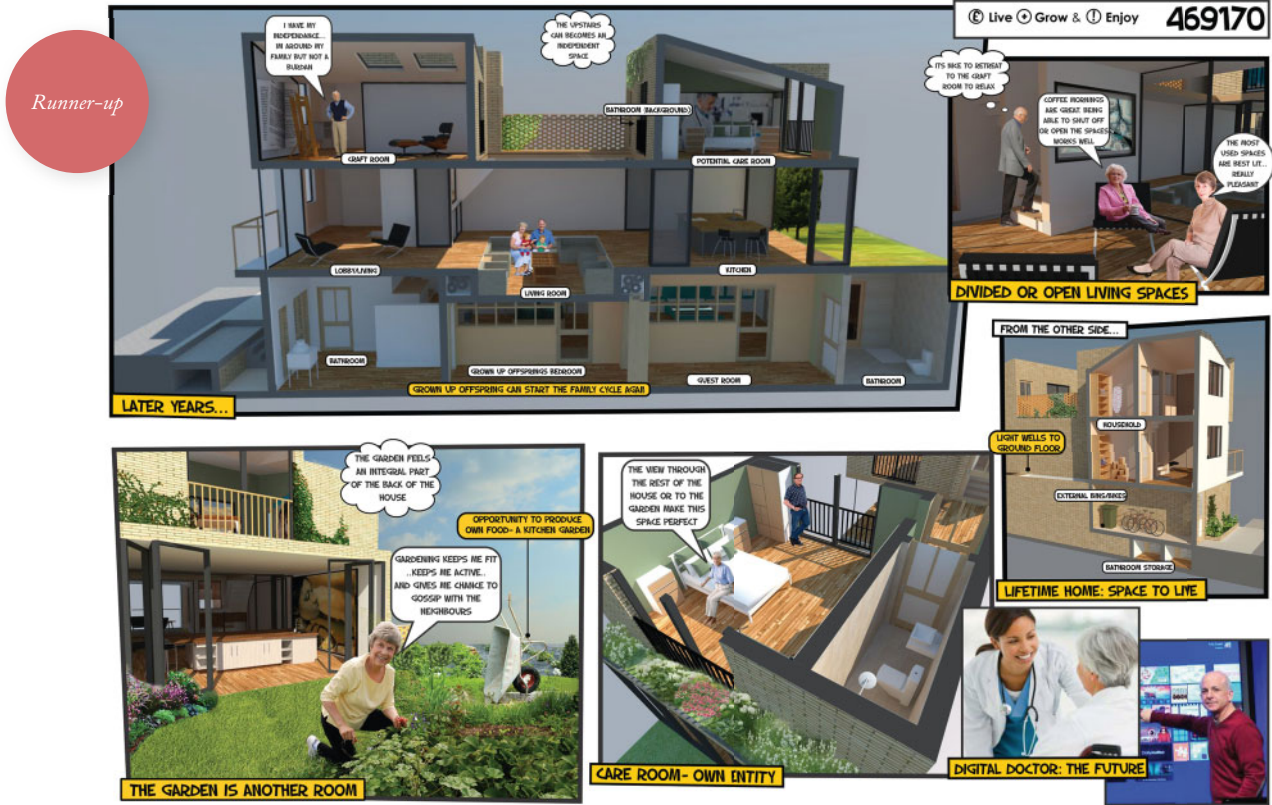
Jason Miles Fowler (Oxford Brookes University), 8–80: A House for All – commended in the 'Interiors' category
'Later in life', these images show a narrative of someone living in a space as they grow older and how the space adapts.

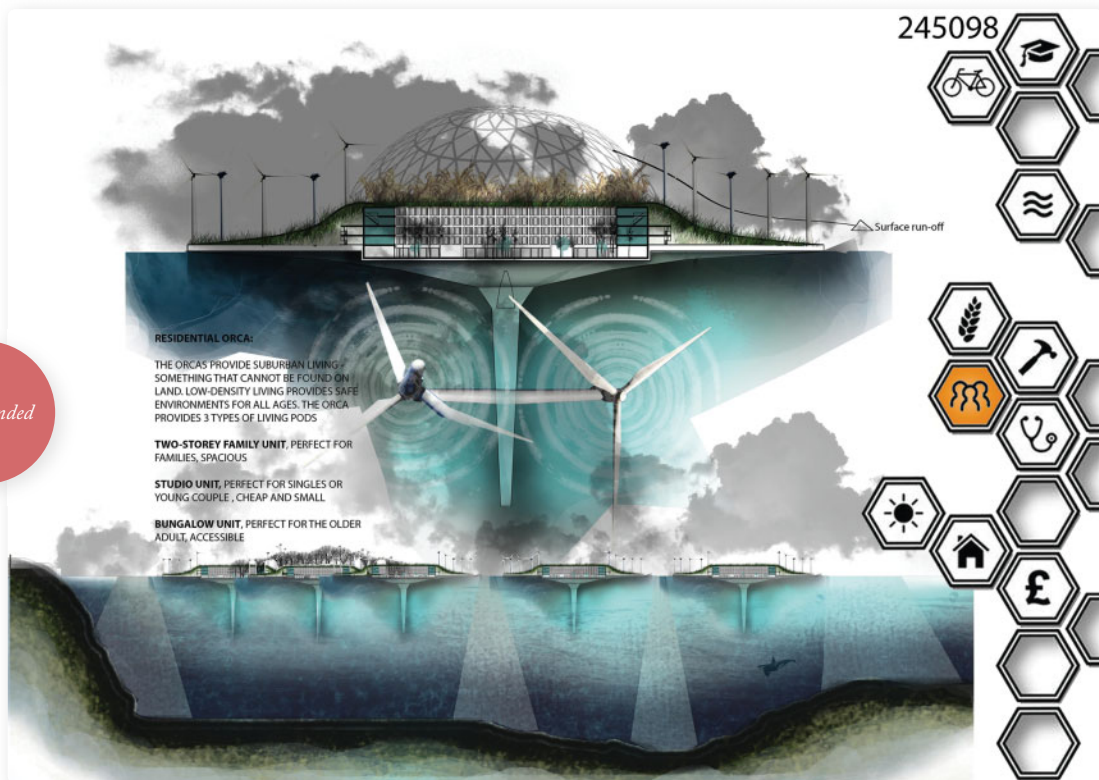133

Commended

Commended

looking after older generations

two individual
living & sleeping spaces
communal dining area
personalised wall panel design
two separate bathrooms – with
plumbing already in place
sliding doors – floor to ceiling

245098

Commended

Surface run-off

RESIDENTIAL ORCA:

THE ORCAS PROVIDE SUBURBAN LIVING –
SOMETHING THAT CANNOT BE FOUND ON
LAND. LOW-DENSITY LIVING PROVIDES SAFE
ENVIRONMENTS FOR ALL AGES. THE ORCA
PROVIDES 3 TYPES OF LIVING PODS

TWO-STOREY FAMILY UNIT, PERFECT FOR
FAMILIES, SPACIOUS

STUDIO UNIT, PERFECT FOR SINGLES OR
YOUNG COUPLE , CHEAP AND SMALL

BUNGALOW UNIT, PERFECT FOR THE OLDER
ADULT, ACCESSIBLE

Lea Olsson and Anne-Ragnhild Larsen (School of Architecture, Copenhagen), The Third Age and the City: Spatial Strategies for Housing the Young-Old – commended in the 'Communities' category
top left: This section drawing shows how the community operates as a series of 'pods', some inside, some outside.

Julia Fischer (Manchester Metropolitan University), An Adaptable Single-Storey Home – commended in the 'Interiors' category
top right: This illustrates an interior with two separate living areas. It shows a plan, a perspective and some personalisation of the space.

scheme to provide income in later life, and by planning changes such as recent moves to allow rear extensions of up to 6 metres (20 feet) to be built without the need for a full planning application. Using a standard mid-terrace house as an example, it advocates the building of an extension which not only can accommodate a growing family, but can also later allow ageing occupants to live entirely on the ground floor while their carers live upstairs. The most distinctive feature of Whitfield's vision is the interactive LED 'mood wall', which can fulfil a number of functions depending on the desires and needs of occupants – from ambient imagery and colours to improve their sense of wellbeing, to entertainment, to communication.

The challenge to societies to respond to various economic and cultural differences is evident in the range of work displayed in the competition entries, which illustrate a breadth of ideas from students across the globe. The competition has generated a wave of interest from many universities and colleges to engage in a useful debate around architecture and the third age. It can be hoped that it will be of benefit in informing future design ideas around the creation of adaptable and appropriate living spaces for our ageing society's changing needs. Δ

The challenge to societies to respond to various economic and cultural differences is evident in the range of work displayed in the competition entries, which illustrate a breadth of ideas from students across the globe.

Commended

Alessandra Upton and Rob Miller (Leeds Metropolitan University), The ORCA: Proposing Sustainable Communities in Oceanic Environments – commended in the 'Communities' category
opposite bottom: This scheme suggests a futuristic world with floating living pods that can adapt over time to create new interconnected communities.

Danielle Green (Manchester Metropolitan University), Designing for the Third Age – commended in the 'Interiors' category
above: The garden as an adaptable, shared social space.

Jayne Merkel

DESIGNING FOR AN EARLIER AGE

While the need for suitable housing to accommodate burgeoning numbers of elderly citizens is undeniably great worldwide, **Jayne Merkel** puts the case that the necessity for affordable housing among young adults is arguably even greater, at least in the US and the UK, and particularly in New York, London and Los Angeles. The relationship between the demands of these two very different age groups is direct, since young people tend not to have children until they can find suitable housing. Forestalled childbearing means fewer members of later generations to financially support growing numbers of aged over time.[1] And young people without suitable housing tend to move back in with ageing parents or drain their financial resources.

The economic crises of the last decade have affected the young more than the old in most of Europe and America and, perhaps to a lesser extent, in many parts of the world. Recent graduates have failed to find jobs, while older people have hung onto theirs, making employment even less available to the young.[2] In the largest and most expensive cities, most of the elderly already have housing and prefer 'ageing in place' to facilities specifically designed for the aged, as Matthias Hollwich and Matthew Hoffman of HWKN (see pp 20-27) and other authors in this issue note. However, many old people (and some younger ones) will need nursing care in facilities designed for the purpose at some point in their lives.

Home Alone

As Hollwich and Hoffman suggest, what the current crisis should teach us is that all housing should be accessible for those with disabilities, and adaptable for different life circumstances. This would allow occupants to age in place, and the buildings to serve populations as they change over time. Most housing today was built to accommodate traditional families, though in some cities (for example, New York, Washington, San Francisco, Denver and Seattle) 40 per cent of all households are now composed of only a single adult. In Paris and Stockholm, this figure is more than half.[3]

Not only is there a mismatch between existing housing and the people who need it, but historic, cultural, economic, political and legal forces combine to impede the creation of the kind of housing required today. Laws made to correct previous abuses, such as overcrowded tenements in New York at the turn of the 20th century, and others intended to make suburbs more exclusive by requiring large plots and restricting multiple occupancy, affect most Americans. This is because the majority live in single-family detached houses that cannot easily be adapted to changing economic circumstances or the types of

disabilities experienced later in life since they have staircases, inaccessible bathrooms, yards to maintain, and no access to public transport. Many neighbourhoods do not even have sidewalks, and much of US suburban zoning prevents young people who live with their parents (and elderly people who live with their children) from creating separate kitchens and entrances.[4]

In New York City, half of all housing units are apartments, but in much more typical Philadelphia, only 17 per cent are.[5] Housing stock more amenable to the way people live today may be a factor attracting young people to dense cities, but the popularity of these areas has created a housing shortage, particularly of the kind of housing needed. Fortunately, several recent events have called attention and proposed solutions to this problem.

Taking the Initiative

In September 2009, the nonprofit Citizens Housing Planning Council (CHPC) held the 'One Size Fits Some' symposium in New York to explore ways in which the housing problem had been handled in Tokyo, Barcelona, San Diego, Montreal and Leipzig.[6] Here, CHPC Executive Director Jerilyn Perine pointed out that: 'Demographics, technologies (such as electrical light, heating and air conditioning), and the uses of the city's building stock have changed dramatically since many of our current housing codes, laws and resolutions were developed.' The Tenement House Act of 1901 and the Multiple Dwelling Law of 1929 set standards for light, air, room size and evacuation that still influence our housing stock and regulations

Rogers Stirk Harbour + Partners and Alexander Gorlin Architects, adAPT NYC proposal, New York, 2013

top left: Working with London's experienced Pocket Living and New York-based BFC Partners, the architects proposed a colourful 10-storey building with a lively street presence and 75 micro-apartments of 22 and 32 square metres (240 and 350 square feet), some tilted upwards to create tall, light-filled spaces.

All of the finalists created a feeling of spaciousness with light or high ceilings, and many suggested shared facilities to complement small units.

Gans Studio (Deborah Gans), Greenhouse Mews, Queens, New York, 2013

above left: Gans Studio's Greenhouse Mews, made up of Hidden Houses with six new units each, could create 60 more decently habitable units on a block. A revision of parking requirements would transform the asphalt pavement for cars into a pedestrian way garden, playground and meeting place.

Gans Studio (Deborah Gans and Isobel Herbold), Hidden Housing: Local Addition, Queens, New York, 2013

above right: Deborah Gans's entry to the CHPC competition added six small accessory units, each with kitchen, bathroom and separate entrance, to the kind of single-family houses that slumlords cram with desperate tenants.. Little wings, called 'barnacles', open the house's basement and attic spaces to light and air.

All of the finalists created a feeling of spaciousness with light or high ceilings, and many suggested shared facilities to complement small units. Rogers Stirk Harbour + Partners and Alexander Gorlin Architects proposed a colourful 10-storey building with a lively street presence and 75 micro-apartments, some set vertically to add light and airiness. Dattner Architects' Studio House had 60 units with various sleeping/living space layouts, a rooftop terrace and lounge, storage, a gym and shared work areas. Rogers Marvel and Future Expansion Architects' 80-unit Tandem proposal had 32 per cent of amenity space, instead of the usual 12, containing a communal dining room, double-height lounge with screening room, roof garden, yoga studio, laundry, bicycle storage, a music practice room, art studio and professional meeting areas.

In their CO: Compact, Connected, Complete project, Architects Curtis + Ginsberg, Grimshaw, Scape and Life Edited proposed 60 units with balconies and 3-metre (10-foot) ceilings, supplemented by a 'product lending library' for items such as cookware. In Max, HWKN and James McCullar Architects also stressed community with a double-height space with communal kitchen, climbing wall, gym, deck, library and vegetable garden at the top of the building. The basement and ground floors would be leased to a nonprofit partnership for retail and community use.

Although many people work at home these days (as many as 40 per cent in some areas of the US) and need office space in their apartments, others now rent work areas in communal offices. These self-employed singles prefer small apartments with the sort of shared social spaces proposed by the CHPC finalists.[8]

enforced by municipal, state and federal agencies today. Illegal occupancy by three or more unrelated adults and unsafe partitions to provide privacy are common in New York City. Perine thus challenged housing officials, designers and developers to 'look at how people are really living'.[7]

In 2013, another CHPC effort led to an exhibition at the Museum of the City of New York entitled 'Making Room: New Models for Housing New Yorkers'. The event displayed the results of a CHPC competition entitled adAPT NYC to design three new housing types not being provided by the marketplace: efficient studios for single households smaller than the 37 square metres (400 square feet) allowed by current zoning; legal shared housing for unrelated adults; and accessory units to make single-family homes more flexible for extended families or additional renters.

Though not one of the finalists, the centrepiece of the show was LaunchPad, a glamorous full-scale mockup of a 28-square-metre (300-square-foot) micro-apartment designed by architect Amie Gross and Pierluigi Colombo, which proved that small can be beautiful. Although the scheme by the winners, nARCHITECTS, and some of the finalists were shown only in renderings on a computer, a number of interesting ideas emerged. Among these was Deborah Gans's redesign of the single-family houses often stuffed with impoverished renters to make them safer and more comfortable, for example by adding little tilted wings that open basements and attics to light and air. Stan Allen and Rafi Segal's proposed Block/Tower project used the structure of an existing Midtown Manhattan office building as a platform for a new mixture of living and workspace.

The winning scheme, My Micro NY by Eric Bunge and Mimi Hoang of nARCHITECTS, a 10-storey building composed of brick-faced prefabricated steel modules containing micro-units of various shapes and sizes, is actually being built. Special zoning variances from the New York City code for this demonstration project have allowed them to build 55 apartments as small as 23 square metres (250 square feet).

Gluck + Architects, who submitted a prefabricated scheme with Katz Chiao Architects, is also building a structure with factory-finished modules containing moderate-income and affordable housing. The Stack, a seven-storey building, will have 56 units on a 15-metre (50-foot) wide, 45-metre (150-foot) deep lot. While prefabrication is not necessarily cheaper than conventional building, it is safer for workers, offers better quality control, and is faster, so some money is saved.

Cutting Your Cloth

Prefabrication is already routinely used in the US to build components such as bathroom pods for hospitals and dormitories. In time, prefabrication could make the placement of well-designed, easily accessible bathrooms, kitchens and other kinds of spaces into existing housing complexes less costly. In Brooklyn, the big commercial developers of the $4.9 billion Atlantic Yards complex, Forest City Ratner, are building a 32-storey residential tower that will be the world's tallest prefabricated building, and it is only one of 15 buildings planned for the site.[9] While there have been problems with the start-up and lawsuits from labour unions, the project is almost certain to lead long term to innovation and cost savings in residential construction.

Another way to cut costs in new construction might be to utilise 'the unrecognized wealth of DIY (Do It Yourself) skills indicated by the popularity of such retailers as Home Depot', as Avi Friedman, a professor of architecture at McGill University in Montreal, noted at the CHPC's 'One Size Fits Some' symposium in 2009.

Forest City Ratner's buildings at the Atlantic Yards are market rate, but they will all contain some 'affordable' units for qualified tenants under tax abatement incentives. Although the project is enormous and numerous subsidised apartments will be created there, much more legislation will be required to meet the need for modestly priced housing – and housing for the kinds of households that exist today – in New York and other cities, such as San Francisco where legislation allowing the construction of hundreds of 20-square-metre (220-square-foot) apartments was recently passed, and Denver, where another micro-unit design competition is taking place.

However, the correlation between housing size and household size has not always been logical, and economics plays a major role. For example, after the Second World War, the Levitt family who had developed expertise in building mass-production homes for shipyard workers during the war, started building houses for the mass market. Eventually they built 140,000 houses in suburban 'Levittowns' on Long Island and outside Philadelphia. However, although the baby boom was in full bloom, the first were only 70-square-metre (750-square-foot) single-floor houses with a living room, kitchen/dining area, two small bedrooms, a bathroom, and an unfinished 'expansion attic' on 18 x 30 metre (60 x 100 foot) plots. Set on concrete slabs, they were built quickly and cheaply on a sort of assembly line with pre-cut timber and nails shipped from factories in California. In the 1950s, the houses grew slightly (to 75 square metres/800 square feet) and came equipped with carports and built-in 12½-inch Admiral TVs.

Although the Levittown houses influenced suburban development throughout the US, elsewhere houses were built manually as they would be after the post-war building boom when mass production was no longer deemed economical. The standard two-bedroom house with an expandable attic remained the norm for more than a decade, even as family size mushroomed. It was ubiquitous until the late 1960s when houses started to grow from an average of 91 square metres (983 square feet) in 1950 to a whopping 218 square metres (2,349 square feet) by 2004.[10] Then the housing bubble burst.[11]

In the last decade, as family size declined, gargantuan apartments continued to be built, especially in global cities, as commercial developers catered to the wealthy. In New York, two recent condominium conversions transformed buildings that had served people of modest means and could instead have been redesigned with micro-apartments or provided excellent facilities for end-of-life care. The Abingdon, in once-bohemian Greenwich Village, was a publicly supported nursing home until it was purchased and converted to a private condominium with units ranging from 300 to 900 square metres (3,200 to 9,600 square feet) 'for the 1% of the 1%', as Keith Kelsey put it on the *CurbedNY* website.[12] The apartments in this six-storey, 1906 Georgian-style red-brick building are now nearing completion. The *New York Times* recently reported that one unit had

In the last decade, as family size declined, gargantuan apartments continued to be built, especially in global cities, as commercial developers catered to the wealthy.

been purchased for around US$23.4 million by Steven A Cohen, the owner of the often-indicted SAC Capital Advisors hedge fund.[13]

This article, on a page devoted to the highest-priced residential sales each week, also noted: 'In another significant transaction, an elegant 4,478-square-foot [416-square-metre] floor-through residence in a sought-after condominium conversion, 18 Gramercy Park South – the luxurious makeover of a Salvation Army residence hall by the high-profile team of Zeckendorf Development, Eyal Ofer Global Holdings, and Robert A. M. Stern – sold for $15,731,962.50. It was the week's second-most-expensive sale.' This was one of several closings reported in the column, for a building that housed 300 single women of modest means until a few years ago; now it contains 16 oversized condominiums for people with numerous homes.

Combining, Subdividing and Recombining

It is not unusual for New York apartments to be combined, subdivided, and recombined, so there are numerous models for architects to consider. The first co-ops, which were built for the upper middle class in the late 19th century, had large house-like apartments with maids' quarters.[14] Even before the Great Depression and again after the Second World War, many big 'pre-war' apartments were subdivided, and then, when house size bloated in the late 20th century, small apartments were combined. This history suggests that Matthias Hollwich's argument for adaptability has real merit – and precedent – to explore. △

Notes
1. Jonathan V Last, 'Start a Family … And Before You Know It, You'll Be Voting for the GOP', *The Weekly Standard,* Vol 18, No 30, 22 April 2013: www.weeklystandard.com/articles/start-family_716283.html. In this right-wing publication, the author cites academic studies that found a correlation between housing costs and family creation. He notes that in low-cost areas, young people marry sooner, and that married people are more likely to vote Republican.
2. Floyd Norris, 'The Old Are Working, But Not the Young', *New York Times*, 7 September 2013, p B1.
3. Eric Klinenberg, 'One's a Crowd', *New York Times Sunday* Review, 5 February 2012, p 4. Klinenberg is the author of *Going Solo: The Extraordinary Rise and Surprising Appeal of Living Alone,* Penguin (New York), 2012.
4. Ara K Hovnanian, the CEO of Hovnanian Enterprises, a builder of single-family and multi-family housing in 17 states, at a panel discussion on 'Shifting Suburbia' at the Museum of Modern Art (MoMA), New York, 8 March 2012.
5. Architecture critic Witold Rybczynski made this point at the 'A Home in the City: Strategies for 21st-Century Housing' symposium held at the Museum of Arts and Design in New York City and sponsored by Fordham University on 7 October 2013. Rybczynski is the author of *Home: A Short History of an Idea*, Penguin/Viking (New York), 1987.
6. For a report on 'One Size Fits Some', a CHPC International Symposium at the Japan Society of New York, 24 September 2009, see: http://archleague.org/2013/03/project-showcase-new-models-for-housing-new-yorkers/.
7. Ibid.
8. The President and CEO of Forest City Ratner, Maryanne Gilmartin, described this trend at the 'A Home in the City:

Strategies for 21st-Century Housing' symposium at the Museum of Arts and Design in New York City on 7 October 2013. She said owners of communal workspaces had told her about this recent phenomenon.
9. Charles V Bagli, 'At Atlantic Yards, Ready to Test Plans for Prefab Tower', *New York Times,* 28 November 2012, p A 31.
10. According to the 'From Modest to McMansion' report published online by the National Association of Home Buildings in March 2006, discussed in a National Public Radio (NPR) report 'Behind the Ever-Expanding American Dream House' by Margot Adler, 4 July 2006: www.npr.org/templates/story/story.php?storyId=5525283.
11. Still, American homes were oversized by the standards of most other prosperous countries. At the CHPC 'One Size Fits Some' symposium in 2009, Azby Brown, an American architect who lives in Japan, pointed out that 'the average square footage of a family-house in Japan was 1,036 square feet [96 square metres]', while that of a house in the US was twice that size.
12. Kelsey Keith, 'West Village Nursing Home to Condo Revealed as The Abingdon', *CurbedNY*, 10 November 2011: http://ny.curbed.com/archives/2011/11/10/west_village_nursing_home_to_condo_revealed_as_the_abingdon.php.
13. Robin Finn, 'At $23.4 Million, a Condo With Space for Big Art', *New York Times*, 12 July 2013, Real Estate Section, 'Big Ticket', p 2.
14. A new history of co-ops and condominiums in America, Matthew Gordon Lasner's *High Life: Condo Living in the Suburban Century,* Yale University Press (New Haven, CT), October 2012, tells this story superbly.

David Birkbeck is Chief Executive of Design for Homes, a social enterprise set up by architects, planners, estate agents and homebuilders in 1999. He is the author of *Building for Life*, which in 2003 became England's test for the quality of residential development, and which he rewrote last year as *Building for Life 12* for the era of the National Planning Policy Framework. Since 2004 he has been both a judge and director of the UK government's Housing Design Awards. He was part of the team behind the 2009 HAPPI report, a term he coined to campaign for the provision of Homes for an Aging Population. He is an RIBA honorary fellow, an NHBC councillor, and sits on the design and sustainable standards advisory board at the Homes and Communities Agency.

Francesca Birks trained as a facilitator and leads the Arup Foresight + Research + Innovation team in North and South America. Her research explores the positive sociocultural impacts of design with a particular focus on social innovation and demographic trends such as the effects of the ageing population on the future of the built environment. She is particularly interested in the design of the user experience within the digital and physical realms and in engaging multiple stakeholders in the design process. Her foresight, research and innovation experience spans education, hospitality, retail and healthcare.

Laurie Buys is a Professor in the School of Design, Faculty of Creative Industries at Queensland University of Technology in Brisbane. Her research interests include active ageing, community liveability, consumer energy use and social sustainability. She is a past President (2006-9) of the Australian Association of Gerontology.

Eric Cohen is a member of the American Institute of Architects New York (AIANY) Design for Aging Committee. His background includes: research related to the evaluation of barrier-free design in everyday use and post-occupancy of senior housing; administration and social service in a continuing care setting; and the design of specialised housing and care for children and those with dementia, as well as the design of private residences and community centres that celebrate ageing in place. A Senior Associate Principal at Ethelind Coblin Architect, he is on the faculty of the New York School of Interior Design, where he developed a graduate studio course focusing on communal housing for seniors in Manhattan.

Edward Denison is an architectural historian, writer and photographer. He has a PhD in architectural history and is the author of *Building Shanghai* (John Wiley & Sons, 2006), *Modernism in China* (Wiley, 2008), *The Life of the British Home* (Wiley, 2012) and *Asmara: Africa's Secret Modernist City* (Merrell, 2003). He has worked in China for many years and is now based in London where he is a research associate and teaches architectural history and theory at the Bartlett School of Architecture, University College London (UCL).

Toru Eguchi is an associate professor at Yokohama National University in Japan where his research topics include building systems and building longevity. He graduated from the doctoral course at the University of Tokyo, and has worked on the Adaptable Futures project (www.adaptablefutures.com) at Loughborough University.

Kathryn Firth is the Chief of Design at the London Legacy Development Corporation (LLDC). She is an architect and urban designer with over 25 years of experience of masterplanning and urban regeneration projects in the US, Europe, the Middle East and the UK. She has conducted research informing practice and policy, including the spatial and social dynamics of the public realm, and urban density and neighbourhood perception. She has taught in Canada, the US and the UK, and ran the MSc City Design and Social Science at the LSE Cities Programme for six years.

Matthew Hoffman is the Communications Director at Hollwich Kushner (HWKN). Recipient of numerous awards for his architectural design and research, his work addresses architecture in the greater context of media and pop culture, with an emphasis on interactivity in the name of architectural activism. His work has been featured by the *Los Angeles Times*, *Huffington Post*, NBC, Fast Company, Fox Business News and the *Wall Street Journal*.

Matthias Hollwich is the principal of Hollwich Kushner (HWKN) and co-founder of Architizer. He is a visiting professor at the University of Pennsylvania, where he created the 'New Aging' international conference on ageing and architecture in 2010. He has previously spoken at TEDx East, TEDx Atlanta and the PICNIC conference. He is driven by the aim to upgrade manmade environments on a human and engaging scale.

Christine Hunter has practised for more than 30 years in the areas of housing and neighbourhood facility design, preservation and sustainability. As a principal of Magnusson Architecture and Planning, she has guided the firm's continuing development of in-house expertise in sustainable design and technology. Her previous housing experience includes the design of homes for both families and senior citizens. She is the author of *Ranches, Rowhouses and Railroad Flats* (WW Norton, 1999), a formal and historical study of American housing types.

Jerry Maltz is co-chair of the award-winning AIANY Design for Aging Committee, which promotes ways to make urban environments more age-friendly – for people of all ages. He worked at the New York State Urban Development Corporation in the 1970s, where he was responsible for coordinating, with numerous New York City agencies, the programming, design and construction of their facilities on Roosevelt Island, a New-Town-in-Town that includes apartments and community centres for seniors.

Richard Mazuch, architect and Director of Design Research and Innovation for IBI/Nightingale, has extensive healthcare experience and is a World Architecture Jury member, a university lecturer/examiner and international conference speaker. He has assisted the UK Department of Health (DoH) and National Health Service (NHS) on many guideline documents, toolkits, workshops and expert working groups. He has worked with the Government Treasury Task Force, the Design Council, Prince's Foundation and the King's Fund. In the last 15 years he has researched and developed 'Design Heals', 'Sense Sensitive Design', 'Emotional Mapping' and the 'Design Prescription' design tools that harness key evidence-based design issues, thereby empowering designers to create optimum living, working and healing environments.

Walter Menteth is a consultant architect, the director of Walter Menteth Architects, a senior lecturer at the Portsmouth School of Architecture, a RIBA Regional Councillor, Chair of the RIBA Procurement Reform Group, and a member of the Southwark Design Review Panel. His practice has won a number of architectural awards and its work has been reviewed and exhibited internationally. An image of the practice's work at Consort Road, London, is on the front cover of the *Lifetime Homes Design Guide* (2011).

Jayne Merkel is an architectural historian, critic, and the author of the monograph *Eero Saarinen* (Phaidon, 2005). She is Book Review Editor of *Architectural Record* magazine, an occasional contributor to the *New York Times*, and a member of the Advisory Board of the *Architect's Newspaper*, all in New York. She is also a member of the Δ Editorial Board. A former editor of *Oculus* magazine in New York and Architecture Critic of the *Cincinnati Enquirer,* she has taught at the Rhode Island School of Design, Parsons/The New School, the University of Cincinnati, Miami University and the Art Academy of Cincinnati.

Manisha Patel is an architect and urban designer, and a director of PRP Architects. She specialises in residential and mixed-use masterplanning in London and the Southeast, working for developers, local authorities and regeneration agencies. She engages with local communities and is an expert in galvanising local stakeholders in contributing to the design process. She currently leads for PRP on Chobham Manor, the first of the legacy neighbourhood sites on the Olympic Park.

Terri Peters is an architect and researcher based in Copenhagen. Her research relates radical strategies of reuse, ecology and inhabitation to emerging architectural approaches for transforming modern housing. In the past decade she has authored more than 200 texts for magazines and journals about sustainable design and the architectural implications of new technologies. She was the Guest-Editor of Δ *Experimental Green Strategies: Redefining Ecological Design Research* (Nov/Dec 2011).

Katherine Prater is a research analyst in the Foresight + Research + Innovation team at Arup. She approaches her work with a background in anthropology and architecture, uniting the sociocultural and technical requirements of design. Current research includes an investigation into the impacts of autonomous vehicles and smart infrastructure on urban design and city planning, as well as a project examining the changing practice of building design as influenced by emerging technologies for design and construction.

Anjali Raje is an executive director of the International Longevity Centre – India (ILC-I), and has been working with the organisation since 2005. She has authored and edited books and papers and undertaken research studies on the various aspects of population ageing and social issues such as child and community development. She has presented at and written papers for several national and international conferences, workshops and seminars on ageing.

Guang Yu Ren is an architect, researcher and independent translator and consultant born and trained in China and now based in London. She has researched and published several books on architecture, including *Building Shanghai* (John Wiley & Sons, 2006), *Modernism in China* (Wiley, 2008), *The Life of the British Home* (Wiley, 2012) and *Asmara: Africa's Secret Modernist City* (Merrell, 2003).

Robert Schmidt III is an architect, and currently finishing his PhD on the topic of building adaptability at Loughborough University where he was a senior research associate on the Adaptable Futures project. A focus of his work has been leading several practice and practitioner-based workshops appropriating the research to real, ongoing projects. He has published extensively on the topic of adaptability including the forthcoming book *Developing Adaptable Architecture* (Taylor & Francis, 2014).

Sally Stewart is the Deputy Head of the Mackintosh School of Architecture at the Glasgow School of Art. She has been active in the research into, and design of, environments for the elderly and those with dementia. She is involved in developing opportunities within

the architectural curriculum for students to understand and engage with the issues of designing for our future selves and user-centred approaches to design.

Mark Taylor is Professor of Architecture at the University of Newcastle, Australia. His writing on the interior has been widely published in journals and books, and he is the editor of *Surface Consciousness* (Wiley, 2003), co-editor (with Julieanna Preston) of *Intimus: Interior Design Theory Reader* (Wiley, 2006), and editor of *Interior Design & Architecture: Critical & Primary Sources* (Bloomsbury, 2013).

Radhika Vaidya is an architect and town planner. In 1983 she co-founded the practice and is a partner in Aniruddha Vaidya and Associates based in Pune, India. She has worked on more than 250 projects in various sectors in urban design, interior design and architecture; and designed townships, residential condominiums, commercial premises and several senior citizen housing projects. She has been a speaker at numerous national- and international-level forums.

Katherine Wilkinson has been the Senior Manager of the Design Research Institute, RMIT University, since 2007, and initiated its annual Design Challenge. Prior to this she consulted on the development of cultural facilities and programme planning, and curated and managed touring exhibitions and events. Her initial degree was in design communications and she has a masters in arts administration from the University of New South Wales.

Susan Wright specialises in the management of urban projects including affordable and market-rate housing, as well as facilities for seniors. Throughout her career she has committed volunteer and professional efforts to the preservation of existing affordable housing and the design of exemplary new residential environments. She is proud to have had an impact on the lives of thousands of low-income New York City residents through her efforts with nonprofit housing and community development groups.

What is *Architectural Design*?

Founded in 1930, *Architectural Design* (△D) is an influential and prestigious publication. It combines the currency and topicality of a newsstand journal with the rigour and production qualities of a book. With an almost unrivalled reputation worldwide, it is consistently at the forefront of cultural thought and design.

Each title of △D is edited by an invited guest-editor, who is an international expert in the field. Renowned for being at the leading edge of design and new technologies, △D also covers themes as diverse as architectural history, the environment, interior design, landscape architecture and urban design.

Provocative and inspirational, △D inspires theoretical, creative and technological advances. It questions the outcome of technical innovations as well as the far-reaching social, cultural and environmental challenges that present themselves today.

For further information on △D, subscriptions and purchasing single issues see: www.architectural-design-magazine.com

How to Subscribe

With 6 issues a year, you can subscribe to △D (either print, online or through the △D App for iPad).

INSTITUTIONAL SUBSCRIPTION
£212/US$398 print or online

INSTITUTIONAL SUBSCRIPTION
£244/US$457 combined print & online

PERSONAL-RATE SUBSCRIPTION
£120/US$189 print and iPad access
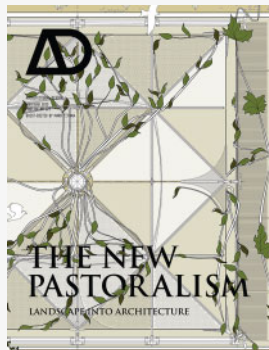
STUDENT-RATE SUBSCRIPTION
£75/US$117 print only

To subscribe to print or online:
Tel: +44 (0) 1243 843 272
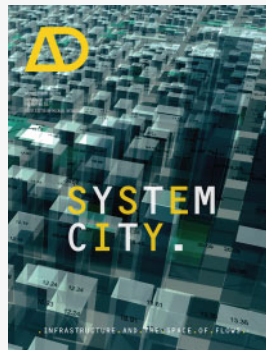Email: cs-journals@wiley.com

△D APP FOR IPAD
For information on the △D App for iPad go to www.architectural-design-magazine.com
6-issue subscription: £44.99/US$64.99
Individual issue: £9.99/US$13.99
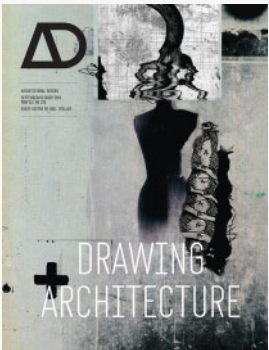

Volume 83 No 2
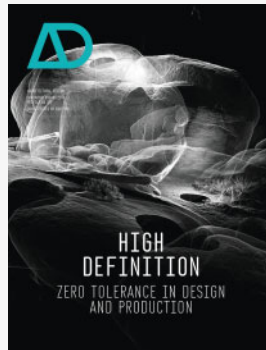ISBN 978 1119 952862

Volume 83 No 3
ISBN 978 1118 336984

Volume 83 No 4
ISBN 978 1118 361429

Volume 83 No 5
ISBN 978 1118 418796

Volume 83 No 6
ISBN 978 1118 361795

Volume 84 No 1
ISBN 978 1118 451854

NOW available on the iPad!

- Buy single issues or subscribe
- Store all downloaded issues to your personal library
- Easily navigable format brings new life to △D articles
- Free to personal print subscribers
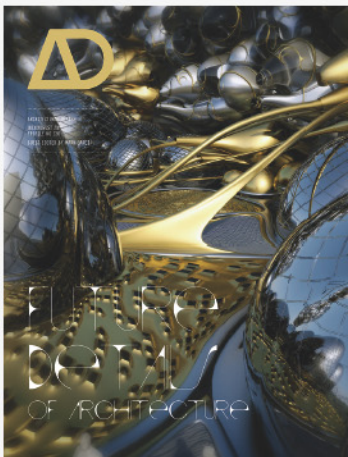
Available on the App Store

MAY/JUNE 2014 – PROFILE NO 229
MADE BY ROBOTS: CHALLENGING ARCHITECTURE AT A LARGER SCALE
GUEST-EDITED BY FABIO GRAMAZIO AND MATTHIAS KOHLER

Although highly ambitious and sophisticated, most attempts at using robotic processes in architecture remain the exception; little more than prototypes or even failures at a larger scale. This is because the general approach is to automate either existing manual processes or the complete construction process. However, the real potential of robots remains unexploited if used merely for the execution of highly repetitive mass-fabrication techniques: their capability for serial production of non-standard elements as well as for varied construction processes is mostly wasted. In order to scale up and advance the application of robotics, for both prefabrication and on-site construction, there needs to be an understanding of the different capabilities, and these should be considered right from the start of the design and planning process. This issue of *AD* showcases the findings of the Architecture and Digital Fabrication research module at the ETH Zurich Future Cities Laboratory in Singapore, directed by Fabio Gramazio and Matthias Kohler, which explores the possibilities of robotic construction processes for architecture and their large-scale application to the design and construction of high-rise buildings. Together with other contributors, they also look at the far-reaching transformations starting to occur within automated fabrication: in terms of liberation of labour, entrepreneurship, the changing shape of building sites, in-situ fabrication and, most significantly, design.

Contributors: Thomas Bock, Jelle Feringa, Philippe Morel, Neri Oxman, Antoine Picon and François Roche.
ETH Zurich contributors: Michael Budig, Norman Hack, Willi Lauer and Jason Lim and Raffael Petrovic (Future Cities Laboratory), Volker Helm, Silke Langenberg and Jan Willmann.
Featured Entrepreneurs: Greyshed, Machineous, Odico Formwork Robotics, RoboFold and ROB Technologies.
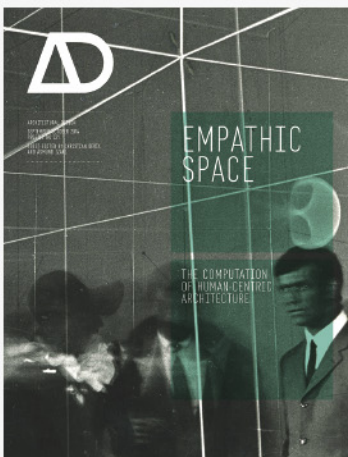
Volume 84 No 3   ISBN 978 1118 53 5486

JULY/AUGUST 2014 – PROFILE NO 230
FUTURE DETAILS OF ARCHITECTURE
GUEST-EDITED BY MARK GARCIA

Despite the exaggerated news of the untimely 'death of the detail' by UNStudio, the architectural detail is now more lifelike and active than ever before. In this era of digital design and production technologies, new materials, parametrics, building information modelling (BIM), augmented realities and the nano-bio-information-computation consilience, the detail is now an increasingly vital force in architecture. Though such digitally designed and produced details are diminishing in size to the molecular and nano levels, they are increasingly becoming more complex, multi-functional, high performance and self-replicating. Far from being a non-essential and final finish, this new type of highly evolved high-tech detail is rapidly becoming the indispensable and critical core, the (sometimes iconic) DNA of an innovative new species of built environmental form that is spawning in scale and prominence, across product, interior, urban and landscape design. This issue of *AD* re-examines the history, theories and design of the world's most significant spatial details, and explores their innovative potentials and possibilities for the future of architecture.

Contributors include: Robert Aish, Rachel Armstrong, Nic Clear, Edward Ford, Ciro Najle, Dennis Shelden and Skylar Tibbits.
Featured Architects: Hernan Diaz Alonso, Ben van Berkel, Greg Lynn, Peter Macapia, Philippe Rahm, Carlo Ratti, François Roche, Patrik Schumacher and Neil Spiller.

Volume 84 No 4   ISBN 978 1118 522530

SEPTEMBER/OCTOBER 2014 – PROFILE NO 231
EMPATHIC SPACE: THE COMPUTATION OF HUMAN-CENTRIC ARCHITECTURE
GUEST-EDITED BY CHRISTIAN DERIX AND ÅSMUND IZAKI

In recent years, questions of space have gained renewed momentum in architecture and urban design, as adaptation, densification and sustainable regeneration have become an increasing priority. While most computing-based design tends to emphasise the formal aspects of architecture, overlooking space and its users, the 'original' computational design approaches first spearheaded in the UK in the 1960s and 1970s tended to be focused on behavioural and occupational patterns. Over the last decade, a new generation of design research has emerged that has started to implement and validate previous investigations into spatial computation, aiming to understand how to design spatial configurations based on user experiences. This revives an interest in the experiential that was first explored in the early 20th century by German and Nordic organic architects, who invented design methods that correlated cognitive responses of buildings' occupants to spatial structure. The current revival of human-centric design, however, represents the first design approach that synthesises spatial design and algorithmic techniques with organic design thinking, which could also be regarded as a return to the 'first principles' of architectural design.

Contributors include: Paul Coates, Christian Derix, Olafur Eliasson, Lucy Helme, Bill Hillier, Åsmund Izaki, Prarthana Jagannath, Dan Montello, Juhani Pallasmaa, Philip Steadman and Guy Theraulaz.
Featured Architects/Designers: Jussi Ängeslevä (Art+Com), Stan Allen, Aedas|R&D, Markus Braach (Kaisersrot), Herman Hertzberger, Kazuhiro Kojima and Kazuko Akamatsu (CAt), Pablo Miranda and Rafi Segal.

Volume 84 No 5   ISBN 978 1118 613481

AD

ARCHITECTURAL DESIGN

GUEST-EDITED BY
LORRAINE FARRELLY

DESIGNING FOR THE THIRD AGE: ARCHITECTURE REDEFINED FOR A GENERATION OF 'ACTIVE AGERS'

Contributors include:

Arup Global Foresight + Research + Innovation
David Birkbeck, Design for Homes
Kathryn Firth, London Legacy Development Corporation
Baroness Greengross, International Longevity Centre-UK
Matthias Hollwich, HWKN
Jerry Maltz, AIANY Design for Aging
Richard Mazuch, IBI/Nightingale
Robert Schmidt, Adaptable Futures research group
Sally Stewart, Mackintosh School of Architecture
Mark Taylor, University of Newcastle

Counterpoint:
Jayne Merkel

A demographic revolution is underway. Across the world, the number of people aged over 65 is increasing: whereas the over 65s in the US make up 13 per cent of the population, this figure will double to 88.5 million by 2050; China's current ratio of 16 elderly people per 100 workers is set to double by 2025, then double again to 61 by 2050. Urban design, housing and other built provision all require rethinking and redeveloping to accommodate this ever expanding ageing population. The design of our urban centres will also need to be transformed to accommodate a more integrated way of living. Suburbia will need to be reshaped – retrofitting, in order to redefine a new type of interstitial space. Accommodating a range of different age groups is about adapting places and spaces to their needs as much as adapting the city for different cultural groups. Can visionary architectural solutions play a key part in the provision by creating sustainable cities for the changing profile of the population, reducing models of dependency for care and transport, and offering opportunities for recreation, leisure and work? This issue of *AD* reflects on the forthcoming challenges that are to be posed globally in Europe, Australia, North America and Asia, while seeking out innovative responses to the problems at both practical and speculative levels. It includes international built case studies and competition-winning entries by practitioners and students.

WILEY