

WORLD HEALTH DESIGN

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APRIL 2013

BREAKING BOUNDARIES

Frank Gehry's new Maggie's Cancer Caring Centre offers hope in Hong Kong



ALSO:

World Congress Brisbane 2013 preview

Design & Health Asia Pacific 2013 review

Project report: Mental Health

Market report: Australasia



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In the spring of 2013, TMK Architekten • Ingenieure, one of Germany's leading healthcare design firms, joined global design firm HDR Architecture. Individually, both firms are impressive. Together, HDR TMK is the strongest healthcare design firm in the world.

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Contributors

Ian Frazer

A greater focus on science, research and innovation in the built environment is needed to meet the health challenges of lifestyle and chronic disease



Ian Forbes

A shortage of post-occupancy evaluations means that architects & planners do not have accurate findings on health building performance



Elsie Choy

Whilst the costs of health infrastructure projects and proposals are straightforward to quantify, the resulting benefits are harder to value



David Kamp

A salutogenic approach to landscape design can help to make the bridge between creating sustainable environments and a healthy community resource



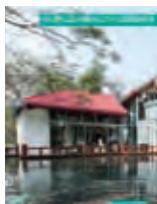
Anthony R Mawson

Retro-fitting car-centric, run down retail shopping malls in the US by redesigning them as mixed-use villages can strengthen communities and improve wellbeing



Cover Image

The Maggie's Cancer Caring Centre in Hong Kong, designed by Frank Gehry.
See pp20-21



Does size matter?

Historically, the role of hospitals has never been just about performing medical treatment and providing care. From Europe to the Middle East to Africa and Asia, from democracy to dictatorship, the hospital is also one of the most powerful political statements a government can make. Even in the USA, where the role of government in healthcare provision is limited, the commercial statement to the market steps in to sing the loudest song. But is big necessarily best? As world governments struggle to make ends meet, and technology drives healthcare into the community, the opportunities for more integrated healthcare models that drive down cost, improve accessibility and promote early diagnosis and more preventive measures of care are changing the shape of healthcare and the infrastructure needed to support it. In our review of the recent Design & Health Asia Pacific 2013 International Symposium in Singapore, we reflect on the success of two small countries, Northern Ireland and Singapore in redesigning their health infrastructure (pp17-19). In Hong Kong, the small but beautiful Maggies Centres are now making an impact internationally (pp20-21). Whilst the USA looks into retro-fitting run down large shopping malls into mixed-use villages (pp64-69). What will the future of healthcare infrastructure look like? Join us in Brisbane at the Design & Health World Congress to explore these themes and others (pp 8-13).

Marc Sansom
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A call for science

Ahead of the 9th Design & Health World Congress in Brisbane in July, a leading scientist and two policy-makers from the region offer their take on the event, while overleaf, find out how a dynamic fringe programme can help add value to your congress experience



Research to innovate: The official Patron of the 9th Design & Health World Congress, Prof Ian Frazer, calls for a focus on scientific endeavour to address today's health challenges by improving the quality of our built environment

As global society comes to terms with today's keynote challenges of climate change and human health, investment in science, research and innovation is ever more critical if we are to build a future for the next generation and their children.

In the 20th century, great advances were made in medical science, enabling society to reduce – and in many cases eradicate – infectious diseases that had plagued mankind for centuries, dramatically increasing life expectancy around the world. In the 21st century, as increased lifespans and modern consumption-led lifestyles combine, we are faced with a new challenge and a major shift in the disease profile.

Debated for the first time at the 66th meeting of the General Assembly of the United Nations in 2011, the health challenge in the modern age is non-communicable diseases (NCDs) or lifestyle diseases, which are now the leading cause of death in the world, representing 63% of all annual fatalities and killing more than 36 million people each year.

Medical science alone cannot provide the solution to this huge challenge. As scientists, politicians and practitioners, we must seek to collaborate across disciplines in an effort to use science and research to maintain people's health and prevent the onset of chronic diseases. Together with climate change, it is the most important scientific question of our lifetime. We can diagnose many causes of sickness, but what are main causes of health? How do we maintain our health, independence and quality of life far into old age? How do we reduce the burden of cost on healthcare systems and economies globally through the prevention of chronic disease?



Prof Ian Frazer AC, FRA, FAA
CEO and director of research,
Translational Research Institute,
Australia

The built environment and the way we design our cities and communities provides a context for civil society and has a huge influence on our lifestyles and our health. We need more scientific endeavour into this fast developing field of work to support the adoption of innovation in the physical environment that will both directly impact people's health and wellbeing and facilitate them to lead healthier lifestyles.

As the world undergoes an economic and demographic shift to the east, Australasia is at the forefront of an opportunity to demonstrate its leadership in the creation and application of scientific research that will build a future society that is healthy, harmonious and economically and culturally progressive.

We look forward to seeing the international community in Brisbane – a city of science and progress that is at the forefront of international efforts to create a healthy global society – for the 9th Design & Health World Congress & Exhibition in July.

Prof Ian Frazer AC, FRA, FAA is chief executive officer and director of research at the Translational Research Institute in Australia. In 2012 he was named a Companion of the Order of Australia for “eminent service to medical research, particularly through leadership roles in the discovery of the human papilloma virus vaccine and its role in preventing cervical cancer, to higher education and as a supporter of charitable organizations”

Size doesn't matter: In his opening message at the 9th Design & Health World Congress in Brisbane, Lawrence Springborg MP, Queensland Minister for Health, will focus on the need for an efficient and effective health service

Around the world, health systems are under ever-increasing cost pressures. Demand for healthcare is rising exponentially due to population ageing and the shift in the profile of diseases from infectious to chronic. In terms of life expectancy, Australia is considered to be one of the healthiest nations in the world. But we are spending an increasing percentage of our GDP on hospitalisation and acute care, with diminishing returns in the overall health of our people.

In Queensland, as in many state and national governments around the world, the health budget is dominant, with over a third of staffing resources committed to providing healthcare. International health systems can no longer sustain this level of investment.

Australians need encouragement to maintain and improve their health and wellbeing. In our quest for better preventative health measures, we must respond to evidence of what works and what does not. Dependency on hospitalisation and healthcare services must be reduced, but a repeat of failed measures is not the key to improved social participation or economic productivity. Queenslanders do not judge our health system by its size, but by health services delivered effectively, efficiently, with care and on time.

Public investment in our health system needs to be re-engineered to extend its capacity beyond its current focus.

Ways must be found to leverage government expenditure and to bring new sources of capital and investment to support our health system.

Our goal must be the creation of a healthy society, with an appropriate level of government resources directed towards an efficient and effective health system. My vision is to develop new collaborative methods and partnerships, to make our health system economically efficient and to achieve better health outcomes for all Queenslanders.

I invite researchers and practitioners to the 9th Design & Health World Congress to learn about our ideas for Queensland and Australia, and to make their contribution to the development of a global healthcare system less dependent on hospital care and medical treatment, and more focused on health.



The Honourable Lawrence Springborg MP, Queensland Minister for Health



The Honourable
Jann Stuckey MP,
Queensland Minister
for Tourism

Welcome to Brisbane

Queensland is proud to host delegates from interstate and across the globe to this worldwide forum for the exchange of research findings concerning the interaction between design, health, science and culture. The business events market is worth almost AUS\$700m a year to Queensland's economy, and international events like this have an important role in raising the state's profile. The 9th Design and Health World Congress & Exhibition joins a calendar of events which, for Brisbane, includes the British & Irish Lions Tour; Brisbane Festival, the QPAC International Series featuring the Bolshoi Ballet, and more. We look forward to welcoming you to Queensland's capital.

A festival of health

A series of new activities on the fringe of the 9th Design & Health World Congress in Brisbane will add a new and healthy dimension to the event

Firmly established as the world's foremost event promoting the exchange of knowledge and research findings through a leading-edge scientific programme that attracts international experts from across the globe, this year's World Congress in Brisbane will reach new heights with the development of a number of fringe activities in a festival and a celebration of design and health.

Sponsored by Aecom and supported by the Health Informatics Society of Australia and the Australasian College of Health Service

Management, the pre-congress symposium on Wednesday 10 July this year will apply a new format. Entitled Future Health Lab, the event will provide an interdisciplinary workshop on the future of global health and healthcare provision.

Starting at 10am, four keynote speakers will deliver scenario papers on the following challenges facing the global health system: a) Climate change and human health; b) Economic and financial challenges; c) NCDs and chronic diseases; and d) Social and health inequities and changing demographics. This will be followed by an interdisciplinary panel session, including an international architect, clinician, technologist and healthcare CEO, tasked with presenting their perspectives on a series of hypothetical future health scenarios before a workshop explores how to address the problems identified.

For the early bird, three sponsored breakfast symposiums, from 7.30-8.30am each day of the conference, will provide further opportunities for interactive debate in an informal setting close to the main halls and supplemented by a healthy breakfast before the main programme starts at 8.45am.

On Thursday 11 July, a Siemens-sponsored symposium will feature three international speakers debating issues around disease management, managed equipment services and green hospitals. On Friday 12 July, Arup will be sponsoring a round-table event debating 'Are we designing the right healthcare infrastructure for future generations?' And on Saturday 13 July, the role of science, research and innovation in healthcare infrastructure will be debated in an Aurecon-sponsored panel debate. More information will be available on these events and the speakers in May at <http://events.designandhealth.com/events/wcdh>



Make the most of the congress in Brisbane with fringe events, including a pre-congress symposium and a programme of sponsored debates



Students are invited to submit ideas on how salutogenic design can improve health status

Student poster competition

The International Academy for Design & Health, in partnership with the Australian Government State Health Departments, Australian Institute of Architects and collaborating universities, invites students to explore new ideas on the planning and design of building typologies that support the development of healthy environments. Students are required to research current issues concerning the promotion of health within their community in one or more of the following four categories: a) Buildings; b) Industrial Design; c) Landscape; d) Interior Design.

The focus of submissions should be on how salutogenic design can improve health status in any public or social spaces such as healthcare, education, the workplace or in an urban setting. Participants should prepare a poster that illustrates their thought process and shows how their design supports the creation of a healthy environment for the community, and an appreciation of the determinants of health and health promotion.

Entrants are required to submit a digital copy of the poster and 400 words explaining the background to the poster idea, including the objectives, the methodology, results and conclusions to awards@designandhealth.com by 15 June. All prize winners will receive complimentary entry to the 9th Design & Health World Congress and Gala Dinner, a winning certificate and the opportunity to display their poster.

Full details of the submission requirements and prizes are available on page 48 and online at <http://events.designandhealth.com/events/wcdh>

Dates with history

The newly restored Brisbane City Hall will provide the perfect backdrop for the Welcome Reception and Academy Awards Gala Dinner to launch and complete the proceedings of the 9th Design & Health World Congress

Built between 1920 and 1930, the heritage-listed Brisbane City Hall is seen as the heart of Brisbane and has been the backdrop to many cultural, social and civic events. On 6 April, 2013, the building was reopened to the people of Queensland following a historic AUS\$215m three-year restoration and repair project that not only saved the building and increased space for community use, but also ensured it met with modern-day standards of sustainability and accessibility.

On the evening of Wednesday 10 July, this celebrated building will help to launch the 9th Design & Health World Congress & Exhibition in Brisbane when it hosts the Welcome Drinks and Cocktail Reception, accompanied by a string quartet, and the prestigious launch of a new publication, Australasian Healthcare Design 2000-2015 (see p13) to coincide with the congress.

Following four days of international debate and networking on the role of design and architecture in improving human health, wellbeing and quality of life, the City Hall will then again provide the closing memories of the World Congress on the evening of Saturday 13 July, when it hosts the Design & Health International Academy Awards, Gala Dinner and Closing Ceremony.

Established as the leading advocacy programme in the world recognising professional excellence in the research and practice of designing healthy built environments, the Academy Awards have a significant influence on the design and development of humanistic environments that support health, wellbeing and quality of life around the world. The judging panel consists of a group of independent experts from all continents of the world, including Europe, Asia, Africa, Oceania and the Americas.

Recipients of the awards will be teams and individuals who through outstanding efforts, have contributed to the progress of knowledge and demonstrated vision and leadership in exemplary initiatives within the field.

This year, the programme comprises 12 categories across the key areas of international health delivery. The final awards will be presented at a prestigious ceremony at Brisbane City Hall, and will reflect important aspects of the exceptional work undertaken by researchers and practitioners at the forefront of the field.

Awards sponsorship

Sponsorship of the Design & Health Academy Awards 2013 provides organisations with exceptional profile raising internationally and alignment with design excellence in the award categories of their choice. For more information on sponsorship packages, contact e-mail info@designandhealth.com

Booking your place

To book your place at the Design & Health Gala Academy Awards Dinner and Closing Ceremony, visit www.designandhealth.com to register online or download the registration form on the rear of the Preliminary Programme. Individual tickets are priced at AUS\$150, with tables of 10 people available at a discounted price of AUS\$1,000. Attendance at the Welcome Drinks and Cocktail Reception is complimentary with a registration for the 9th Design & Health World Congress & Exhibition.



Saturday night's Academy Awards will recognise excellence across 12 categories



The splendidly restored Brisbane City Hall will host the congress's opening and closing events

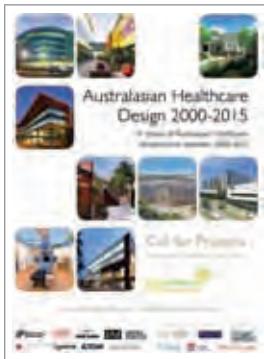


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Re-energising health

The International Academy for Design & Health (IADH) and its Australasian partners are inviting project submissions for a new and exciting publication to be launched at the 9th Design & Health World Congress in Brisbane, from 10-14 July

Australasian Healthcare Design 2000-2015 will review past, current and future projects and trends in healthcare design in Australia and New Zealand, providing a unique reference publication for researchers and practitioners in the field of design and health, both in the region and internationally.

The new book will be published by the IADH and edited by Kate Copeland, immediate past president of the Australasian College of Health Service Management (ACHSM) and senior director of clinical infrastructure at the Health Infrastructure Branch within Queensland Health. It is being produced in collaboration with Government State Health Departments and the Australasian partners of the 9th Design & Health World Congress, which will be held in Brisbane from 10-14 July, 2013. These include the Australian Institute of Architects, the ACHSM and the Health Informatics Society of Australia.

Australasian Healthcare Design 2000-2015 will feature a collection of 20 essays from prominent Australasian academics and practitioners on topics ranging from the trends in acute care, mental health and children's health to issues such as health policy and practice, medical research, health technology and workplace design. The new book will also provide a comprehensive catalogue of all major projects delivered during the most remarkable period of capital investment in health infrastructure ever seen in the region.

The publication will be provided on a complimentary basis to all federal and state health departments in Australasia, as well as to all delegates at the 9th Design & Health World Congress in Brisbane. Copies will also be available for sale during and post the event.

Who should submit?

The publication is open to any Australasian or international organisations in both the private and public sectors involved on the design and/or delivery of a healthcare building in Australia or New Zealand during the period 2000-2015.

All submissions of projects will be considered for publication in the project directory, if completed during the period of 2000-2015. An editorial decision will be made as to which projects feature in the project review section, which will include lengthier descriptions and multiple images. There is no fee for publication.

To submit a project, the Call for Projects must be completed in full and sent together with a 750-word project description and a selection of high-resolution images to whd@designandhealth.com no later than the extended deadline of 17 May. To download the Call for Projects and Project Submission Form, visit www.designandhealth.com



Gold Coast's Robina Hospital expansion, by BVN Donovan Hill

Sponsorship opportunities

The publication is being entirely funded through the generosity of its sponsors, including Billard Lease Partnership, Lend Lease, Aecom, Destravis Group, Lyons, BVN Donovan Hill, Hames Sharley, Conrad Gargett and Woodhead. It will be distributed on a complimentary basis to all federal and state government health departments in Australasia, and to all participants at the 9th Design & Health World Congress. Opportunities to sponsor the publication are open until 24 May. To support its collaborative spirit, there is a flat sponsorship fee of AUS\$5,000. For more information on how to sponsor this unique publication contact: info@designandhealth.com



Allen Lau

Silver Thomas Hanley's Sunshine Hospital Radiation Therapy Centre

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A few years ago I was introduced to a particularly valuable aphorism, one that has shaped my thinking in nearly every aspect of my personal and professional life to a significant degree ever since. Peter Bardwell, FAIA, FACHA, the noted US architect currently serving as the president of the American College of Healthcare Architects, pointed out to me the distinction between the "what" and the "so what?" The "what" is simply an item on record – little more than a "congratulations", suitable for framing, a trophy whose place is for show but not necessarily for significance. The "so what?" is why that item matters – its true value.

In recent years I have caught myself applying the "what/so what?" litmus test to some of what the research community is producing, and it is not always clear to me that this is a test that has been seriously applied by researchers to their own work. Make no mistake: I am genuinely impressed with any research effort that seeks to discover something, to prove something, or to otherwise confirm for us a point that seemed worthy of the time and effort devoted to the investigation. But all too often researchers can get caught up in the great sense of accomplishment at having proved something, without paying adequate attention to why it matters.

In architecture and design, it is frankly old news that environments, both natural and built, influence human health. Granted, we are all very curious about the subtleties of that influence, and indeed there is some excellent research going on that is clarifying and exposing some of those influences in ways that are extraordinarily interesting and useful. But after the impact, or the "what," is identified in research, are we effectively asking "so what?" Does the designed environment generate a positive health impact that justifies its cost, for example? If an environment improves human learning or intellectual performance, by how much could it improve standardised testing of students, and what difference would that make in international competitiveness among students in a job market? How much does a design feature improve the health of occupants, and to what end: a reduced demand on the medical infrastructure? Again, at what cost?

And are the answers to these questions intuitive, or themselves the results of meaningful, substantive research? My sense is that we must diligently pursue a compelling reason for doing design differently so as to enhance health, because there are not enough building owners willing to simply "do the right thing" because it sounds plausible. They will insist that there be some accompanying "so what?" research to justify the decision to do the right thing – and where applicable, incur the additional expense.

Research must celebrate its "whats" with genuine appreciation for the successful achievement of rigorous research in and of itself, and for the meaningful insights that it yields. But the research community, and those who look to it for intellectual leadership, must be vigilant to maintain a sharp focus on the "so what?" of research. May we never be satisfied to continue to fill our trophy cases with investigative "whats" without paying adequate attention to finding the compelling "so what?" impacts of those trophies.

Dr Ray Pentecost III, DrPH, FAIA, FACHA, is the president of the International Academy for Design & Health



So what?

It is not enough for research to show how the environment shapes our health. We must also understand what the results mean in the real world, and use them as a tool to justify to the value of a new approach, writes **Ray Pentecost**

There are not enough building owners willing to do the right thing

CREATING EXCEPTIONAL CANCER CARE FACILITIES



The Victorian Comprehensive Cancer Centre (VCCC) is a new \$1 billion world-class cancer centre to be built in the inner Melbourne suburb of Parkville. The VCCC aspires to be one of the best cancer centres in the world through the collaboration of recognised leaders in cancer research, care, treatment, education and training. The VCCC is a powerful alliance between Peter MacCallum Cancer Centre, Melbourne Health, The University of Melbourne, Walter and Eliza Hall Institute of Medical Research, The Royal Women's Hospital, The Royal Children's Hospital, Western Health and St Vincent's Hospital Melbourne.

The Victorian Comprehensive Cancer Centre is being undertaken by joint-venture partners Silver Thomas Hanley (STH) and DesignInc. (STHDI) plus McBride Charles Ryan (MCR) Architects. The Joint-Venture was created specifically for the design and delivery of major health projects across Australia, bringing together outstanding creative and technical knowledge through dedicated health facility and research laboratory design teams with extensive local and international experience.

The project is jointly funded by the Australian and Victorian Governments contributing \$854.6 million, with the remaining funds to come from member contributions, sale of surplus land and philanthropic donations. Construction of the project commenced in 2011 and is scheduled to be completed by the end of 2015.

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Silver Thomas Hanley DesignInc
McBride Charles Ryan

Small is beautiful

The city state of Singapore has long been recognised for possessing a healthcare system comparable with any other country in the world in terms of both the quality of care and its affordability. **Marc Sansom** reports from Design & Health Asia Pacific 2013

In 2000, Singapore's healthcare system was ranked by the World Health Organisation as the best in Asia, ahead of Hong Kong and Japan, and the sixth best in the world, despite spending just 4% of GDP on healthcare compared with 10-12% in Europe and 18-20% in the USA.

It is a testament to the country's administration that almost every type of medical treatment is available at a very high quality and at an affordable price, providing an ideal backdrop to the inaugural Design & Health Asia Pacific 2013 International Symposium & Exhibition. Yet, as the demographic benefit of a large and youthful workforce enjoyed by the emerging tiger economies of Asia subsides, ageing populations and declining fertility rates, combined with rising public expectations and changing patterns of disease, most notably a rise on the level of lifestyle or non-communicable disease (NCDs), such as diabetes and obesity, are presenting new challenges in Singapore and across Asia.

The recent announcement by the Singapore Government that it plans to grow its population, principally through immigration to 6.9m by 2030 from its current size of 5.2m, is one mechanism it believes is necessary to maintain a strong and productive workforce to pay for its ageing population.

At the level of health policy, another mechanism is to shift the emphasis to a more salutogenic perspective by focusing on maintaining the health, wellness and independence of its population long into old age, thus reducing the burden of cost on its healthcare system.

Introducing the symposium, group chief executive officer of the event hosts, Alexandra Health and the 2011 double Academy award-winning Khoo Teck Puat Hospital (KTPH), Mr Liak Teng Lit recognises that whilst the core role of the hospital will always be "the repair shop of medical treatment", it also has a prominent leadership role to play in health promotion.

As a great believer in the duty of the health professions to "walk the talk", by leading healthy lifestyles and providing their patients with role models, Liak was the visionary behind the inspiring KTPH, recognised internationally and at home for its health-promoting qualities. As the first speaker, chief executive officer, Mrs Chew Kwee Tiang expressed how every aspect of the KTPH from its design and construction to its service delivery was driven by a vision to: "Help our people live a long and healthy life and support them with thoughtful and dignified care to the end."

She added: "The three concepts we followed in the design of the building are: placemaking to create spaces that promote people's health, happiness and wellbeing; health promotion to design an environment that nudges people into action that keeps them healthy; and community ownership. We recognised in the design the link between the environment and four outcomes: patient stress; staff stress; safety; and quality. The KTPH offers a patient-centric environment, that is 'high-touch', energy-efficient, and supportive of the healing process with natural light, greenery, good ventilation and quiet corners for patients and their families."

As its population expands to meet the government's growth plans, the pressure on the health system and hospitals like the KTPH will become ever greater. And despite Singapore's wider philosophy to focus on its people's health, it remains necessarily committed to significant investment in its health infrastructure.

Tasked with delivering all healthcare facilities in Singapore, the MoH Holdings Health Infrastructure Projects Division (HIP) is central to implementation of Singapore's national healthcare delivery plan, as a repository of



Ng Teng Fong General Hospital and Jurong Community Hospital

lyons

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Top left: Liak Teng Lit, group ceo, Alexandra Health. Top right: Chew Kwee Tiang, ceo, Khoo Teck Puat Hospital. Left: John Cole (left), deputy permanent secretary at the Department of Health, Social Services and Public Safety, Northern Ireland

providers in the community, as well as non-healthcare community partners such as grassroots organisations, employers, educational institutions and sports groups to help the community stay healthy."

With the new hospitals located in a dense urban environment at the centre of the Jurong Lake District Masterplan, integrating the fundamentals of patient focus, care in the community, seamless integration of service delivery, future proofing, integrated ICT with smart and green technology and emergency preparedness into the design of the hospitals was the priority, explained Mr Foo. "Every time we were faced with a challenge, we tried to turn it into a patient benefit. For example, the design enables every patient to have their own window in naturally ventilated wards, with the planning designed to provide a restful environment, despite the noise of the urban setting.

"Greening the hospitals was also a priority in an urban setting, with the installation of an outdoor 'sunrise' garden for ambulatory patients and visitors; a specialist outpatient clinic therapy garden; a sky garden at every floor; and a community wellness garden as a large public space with a health and fitness theme for hospital staff and the extended community."

As global health systems struggle with rising costs and expectations, few have been able to build a clear vision for how to create a new and more efficient model that can deliver high quality healthcare at an affordable price. One health system that has been able to make significant progress is Northern Ireland, which over the past two decades, has been led by John Cole, deputy permanent secretary at the Department of Health, Social Services and Public Safety.

With a population of 1.8m, Northern Ireland has the advantage of its health and social services being under the control of a single government department, enabling better integration around the needs of patients and users. Faced with its own funding challenges, the health system in Northern Ireland needs to make savings of 3.5% each year to break even. "Integration of services therefore", explains Cole, "and a focus on preventing illness and improving health and wellbeing through a total system design approach became enshrined in a new Departmental policy document, called *Transforming Your Care*, in order to bridge the funding gap at the same time as improving the quality of care.

"Central to the delivery of the plan" explained Cole, "is the location of services in a mix of local health centres, community health centres, local hospitals, acute hospitals and regional centres, with the movement of out-patient diagnostics and treatments from acute to the community and of complex specialties to Centres of Excellence. The key issue is moving chronic disease management to the community and preventing unnecessary hospitalisation."

As the USA and larger European countries struggle to meet the financial and quality of care challenges posed in the 21st century, the examples of Northern Ireland and Singapore, are, on a smaller scale, providing vision and leadership in the reform of their health systems for future generations.

Singapore's public healthcare facilities, guidelines and knowledge management. Dr Norman Wu, director, MoH Holdings HIP explained how this would mean a "doubling of the healthcare budget from S\$4 billion to S\$8 billion over the next five years, resulting in more accessible and affordable healthcare, including a 30% increase in public acute hospital beds; a 100% increase in community hospital beds; and a doubling of capacity for long-term services."

Singapore has adopted an integrated care model that is seeing the implementation of a more structured approach to investment in its healthcare infrastructure and the redevelopment of its public healthcare facilities, including its acute hospitals, community hospitals, nursing homes and polyclinics across its six healthcare clusters.

Set to open in 2014, the most advanced of these developments is the 700-bed Ng Teng Fong General Hospital and 400-bed Jurong Community Hospital, which is being led by chief executive officer of Jurong Health Services, Mr Foo Hee Jug. Designed by CPG Consultants, the new hospitals will not only provide medical treatment but will serve the health and wellness needs of its population of 900,000 residents, of which 7% or 63,000 are over the age of 65.

Mr Foo says: "We aim to provide an integrated and seamless care experience for the community by working closely with care



Marc Sansom is editorial director of World Health Design

Health leaders from Singapore, Malaysia, Qatar, Australia, South Africa

Breaking the boundaries

Cancer charity Maggie's has opened its first centre outside the UK – and the success of Frank Gehry's building in Hong Kong proves that the need for a supportive, stress-free space for patients and carers is a universal one



Cancer care charity Maggie's has for the first time opened one of its feted facilities outside of the UK. Maggie's Hong Kong, which opened in March, continues the organisation's use of world-renowned architects to design its centres, with Frank Gehry taking the reins for his second Maggie's building (the first was in Dundee, completed a decade ago).

Taking the form of a series of pavilions with steeply pitched roofs, set around an intimate garden, the building is recognisably Asian in its appearance, and yet the core ideas that define every Maggie's – the homely 'kitchen table' around which people can gather, for example, or the strong connections made with nature – have been carried through. "The building has feelings which I hope engender community activity, and that it's comfortable for the patients to be there," said Gehry. "It's respectful of Chinese architecture and motifs. I hope it's not copying anything Chinese or architectural, but I hope it's very respectful of them."

Maggie's has in fact had a presence in Hong Kong since 2008, when an interim facility was set up in a temporary building at Tuen Mun Hospital. The fact that more than 10,000 people with cancer, and 2,000 carers, visited the facility in 2011, demonstrates that the need for an emotionally supportive, practical and non-institutional environment for patients is a universal one, irrespective of geographical boundaries.

Gehry, meanwhile, had a particularly poignant message about his design: "I was going through the loss of a daughter while I was designing the Centre. I think you sort of suck it up and hope to make something that is soothing and respectful and hopeful. There's always hope, it's not a dead end."

Redesigning Rehabilitation

For short-term users of mental health services, design can play a dramatic role in breaking down stigma and assisting recovery. **Veronica Simpson** reports

The power of architecture to both contain and sustain the long-term populations of mental health facilities has been amply demonstrated in recent years. There are now exemplary schemes around the world that place accommodation and treatment spaces around landscaped gardens or courtyards, providing ample daylight, inspiring views, passive supervision and accessible outdoor spaces, all within an inherently secure setting.

Just as challenging – and possibly more complex – is the design of short-term or occasional spaces for people in states of emotional crisis. Is it possible to create a sense of welcome, security and safety in a facility that is visited for a day, an afternoon or just an hour? What more must a building do to communicate its intentions when those seeking help are doing so voluntarily? How can the design of these buildings attract those in greatest need of treatment or counselling, and facilitate their recovery while they are there?

Emerging typologies

In the last few years, a handful of new building typologies have emerged that attempt to address the whole spectrum of emotional needs of people at their most frightened and vulnerable. One of the most inspiring is the South Essex Rape and Incest Crisis Centre (SERICC), based in the east London suburb of Thurrock. SERICC is one of the UK's oldest charities for abused women, and when Sarah Featherstone, of Featherstone Young



The South Essex Rape and Incest Crisis Centre (SERICC): Featherstone Young Architects' shingle-clad 'pods' help soften the building's external appearance

HELIX Forensic Psychiatry complex, Flemingsberg, Sweden

Architect: BSK Arkitekter

Client: Locum

Cost: US\$117m

Size: 17,000sqm

Completion: 2012

Landscape architecture Jonas Berglund, Nivå Landskap

Structural engineer: ClaesHenrik Claesson, ELU

Construction: NCC

This new building for all of Stockholm's regional psychiatric requirements – from healthcare to forensic psychiatry for sentenced violent offenders – marries optimum security with a calm, uplifting environment that takes full advantage of its hilltop forest setting. Rocky outcrops with pine trees between the wards obscure the scale of the complex, while the hilltop position also minimises the visual impact of the six-metre-high perimeter walls. The main building is arranged as two X-shapes, to optimise natural daylight and internal sightlines. The complex is organised with a focus on the communication arteries (dedicated to either personnel, patients or visitors) thereby reducing the number of secure passages and doors required. The healthcare spaces are substantially daylit, with generous ceiling heights and the use of high quality natural materials. Decorative textures and elements include a printed window pattern that acts as a screen, and a rippled concrete wall finish that contrasts beautifully with natural wood and coloured wall panels. The four patient wards per block are built around a 'caretaker plaza' where personnel can meet and share knowledge. In this central space, patients are provided with a variety of flexible activity and relaxation settings, with ample seating, window nooks, and forest views from every window.



Max Plunger

Architects, was asked in 2005 to refurbish and extend the shabby, church-hall base from which SERICC operated, she was struck by the fact that there are "little or no historical precedents for buildings or environments [that] respond to this need".

In order to identify the appropriate spatial requirements, Featherstone and her colleagues conducted lengthy interviews with SERICC staff and their clients – women aged 13 and over who have experienced sexual violence – to understand the nature of the charity's work and how women feel when they visit the centre. The consultations resulted in an 'emotional diagram', which informed the design. "The first-time visitor has a very different experience than someone who's been there five or six times," says Featherstone. "Initially, you don't want to feel that there are lots of people watching you. You want to feel quite cocooned." But, as the visits continue and the client begins to make progress, they become more open to forging links with other visitors, and interacting with the wider environment: as Featherstone puts it, "they come to feel a part of the family."

The design solution involved the building of a new first floor into the existing, double-height hall. This floor is divided into two distinct but connected areas, separated diagonally by a movable timber-clad 'ribbon wall', which acts as a bookshelf and further acoustic buffer between office and counselling rooms (the previous arrangement had two counselling rooms leading directly off the office space, with almost no acoustic separation). On the office side, the atmosphere is light, bright and open, with flexible meeting and working spaces. The counselling rooms have a quite different character, typified by oddly angled walls, strongly coloured upholstery and cosy nooks: quirky, shingle-clad window pods have been bolted on to the building, adding a fairytale quality to the exterior; and helping to break down the daunting aspect of the building's approach – through the church graveyard. These pods also make the counselling rooms feel cosy and contained.

The clarity and charm with which this little building communicates



SERICC's cocooning counselling rooms

its mission has won widespread support (as well as an RIBA award), but more importantly, it has dramatically improved the circumstances of the women and children who visit, as well as those who work there. "When it opened, people responded immediately to it," says SERICC director, Sheila Coates MBE. "Most of the women who come here have never seen anything like this – it has no straight walls, and the pods are unique.

They said it makes them feel special... Coming to a space like this makes them feel valued. I see the effect it has on them when they enter our space. There is a feeling of safety and calmness – and a huge part of that [comes from] being somewhere that doesn't look in any way like an institution."

Designing for the dispossessed

From that groundbreaking beginning in 2006, it appears that healthcare authorities everywhere are waking up to the power of unorthodox designs in dealing with specific patient groups. In Australia, New South Wales (NSW) is undergoing something of a revolution in its sub-acute mental health provision for Aboriginal or indigenous Australian drug and alcohol addiction – a problem that apparently afflicts three times as many indigenous as non-indigenous Australians. The NSW Health executive believes that creating culturally appropriate environments for Aboriginal service-users has the power to substantially enhance the effects of rehabilitation and therapy. A few new, dramatically different typologies have emerged to date, including the Bunjilwarra Koori Youth Alcohol and Drug Healing Service, by the Melbourne-based Vincent Chirisp Architects together with the New South Wales Government Architects Office's Indigenous Design Unit. The 16-bed residential facility (patients are expected to stay for between three and six months) is all about unorthodox spaces.

Is it possible to create a sense of welcome, security and safety in a facility that is visited for a day, an afternoon or just an hour?



Bunjilwarra Koori Youth Alcohol and Drug Healing Service, a culturally appropriate mental-health facility for the indigenous Australian population in New South Wales

Set in bushland, the modern-looking buildings are fragmented, typified by diagonal outlines of corrugated cladding. They reference the shape of iconic bush shelters, and are arranged around a central fire-pit. The layout is inspired by traditional indigenous community villages and enables residents to weave multiple paths through and between the buildings, developing their own relationships to the surrounding landscape. Opportunities for informal gathering abound – in and around the shelters, in a covered decking area and also in the central 'cultural building', which offers a unique, sacred spiritual healing space for up to 20 people.

This ethnically and demographically specific, spiritually focused approach is also being explored – albeit for a far more privileged population – in Stantec's luxurious clinic aimed at treating the drug and alcohol addictions of Qatar's affluent young (see case study). Stantec's lead interior architect on the project, Velimira Drummer, and her team were well aware that only an environment that matched the opulence of wealthy young Qatari's homes could even start to break down the stigma and fear that rehabilitation may spark in these youngsters. But, more to the point, the centre – funded by the state and intended as an exemplar project for

Ros Kavanagh



**Cherry Orchard Child and Adolescent Facility,
Dublin, Republic of Ireland**

Architect: Reddy Architecture + Urbanism

Client: Health Service Executive Dublin Mid-Leinster

Cost: €6.3m (£5.4m)

Size: 3,500sqm

Completion: 2012

Structural/civil engineer: O'Connor Sutton Cronin

Quantity Surveyor: O'Reilly Hyland Tierney + Associates

Main Contractor: John G Burns Limited



The new Linn Dara Child and Adolescent Mental Health Facility at Cherry Orchard Hospital is one of the first physical manifestations of the Irish Health Service's new Vision for Change mental health programme, aimed at transforming both its buildings and its care delivery into world class, user-centred and recovery-oriented facilities. Reddy Architecture + Urbanism's design, intended as an exemplar for the country's mental health services, amalgamates several existing satellite departments into one site, providing services for young people aged two to 18 years. Set in the parkland of South Dublin County, the building's design was inspired by organic and plant forms, with three storeys at varying heights to minimise bulk and massing. Two child and family community teams, an adolescent community team, an adolescent day hospital, staff training department and administration support services are accommodated in different wings while providing staff interconnectivity through a shared, common and secure foyer.

Key aspects include natural light and ventilation, high quality interior design and art installations, and visual and physical links with the outside – via green roof terraces, integrated winter gardens and courtyards, which provide safe havens or decompression zones for patients and staff. Each 'wing' has a discreet, dedicated entrance and individualised colour scheme inspired by specific plants.



Photography by Sam Noonan

A place of refuge, safety, security and healing

The first stage of Glenside Campus redevelopment has reached completion: a modern 129-bed mental health and substance abuse centre in Adelaide, South Australia, designed jointly by Swainbury Penglase Architects and MA.

The new facilities provide a high quality environment that supports a recovery-focused model of care.

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future rehabilitation centres – is designed to help the residents find serenity and purpose again through their Islamic faith.

The centre is therefore pitched as somewhere between a resort and a spiritual retreat, its layout and design inspired by Islam's '12 steps to serenity', with a mosque at its physical and symbolic centre. The whole atmosphere, layout and treatment programme, says Drummer, "is designed to support their psychology and spiritual identity".

Playful and unexpected

For mental health buildings to speak directly to their communities, creative architectural responses are a particularly powerful tool. And playful design solutions are possible even for large, clinical facilities. The Republic of Ireland's national health executive is currently determined to address the historic failings in its mental health services provision, as laid out in a 288-page policy framework document entitled Vision for Change. Aidan Healy, managing director of Reddy Architecture + Urbanism says: "We have a sorrowful history of how mental health users have been accommodated in Ireland." Reddy Architecture

The Qatar Treatment and Rehabilitation Centre, Dohar, Qatar

Architect/interior design/landscape architecture/electrical, mechanical and structural engineering:
Stantec and AEB
Client: ASHGHAL Public Works Authority
Cost: £140m
Size: 70,000sqm
Completion: Estimated 2014

The Qatari government commissioned Stantec to design an inspiring drug and alcohol rehabilitation treatment centre to help break the chain of addiction for its affluent young, as well as provide faith-based teaching. Located 8km from Dohar city centre, the design of the QTRC is an inspired blend of contemporary and traditional Islamic architecture. A series of 12 buildings reflect the Islamic '12 steps to serenity' philosophy, all organised around the spiritual centre – a double-height mosque clad in back-lit natural stone. Gardens and courtyards are woven throughout the plan; as lead interior architect Velimira Drummer explains, "gardens are a representation of paradise in Islamic culture, and the use of water, a symbol of purity and renewal, is an important element." The facility will house up to 200 patients, with five VIP villas for the super-rich and royalty. Clinical spaces are luminous and cool, utilising white marble and off-white limestone as well as artworks and calligraphy, while bedrooms and private spaces are warmer-toned, with luxurious bespoke furnishings and silk carpets, but there is also a secure, anti-ligature wing for those in need of heightened supervision. Socialising is encouraged in the residents' 'club', a games room, a library and barber's and also at the spa and extensive sports facilities. Educational facilities and an auditorium are placed at the perimeter, as are an outpatient clinic and a halfway house for those transitioning out of rehab.



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Jill Tate

Low Secure Unit, Northgate Hospital, Morpeth, UK

Client: Laing O'Rourke/Northumberland, Tyne and Wear NHS Trust

Architect/lead consultant/landscape architect: Medical Architecture

Size: 1,400sqm

Cost: £8m

Completion: 2013

This new centre is for the long-term continuing care, treatment and rehabilitation for men with learning disabilities, and those with developmental issues that can pose a threat to public safety. The brief was to provide first-class accommodation comprising: single, en-suite bedrooms; increased therapy and activity spaces; and better external space for service users and better facilities for staff. Following consultations with all stakeholders, the NHS Trust felt that smaller accommodation clusters would improve care and treatment for the service users, many of whom have impaired social skills and struggle to cope on larger wards. The new building comprises two accommodation wings with a central element linking them. Each wing is made up of four six-bedroomed flats in two identical square blocks, with a central shared patient space (in addition to the flat's own communal space) combined with entrance and staff facilities. Connected to the ward wings via glazed links, the central element takes the form of a substantially glazed pavilion, providing views on to the external landscaping. Timber elements wrap around the building, with vertical timber posts screening external staircases to provide privacy and permeability of views, as well as enhancing the non-institutional exterior presentation of the building.



+ Urbanism's Cherry Orchard Child and Adolescent Facility (see case study) is one of the first facilities to exemplify a new direction.

Located just outside Dublin, the facility is not at all what its visitors or clients would expect. There is barely a straight line in the building, which is inspired by organic forms and vivid colours that echo the tree-filled parkland around it. Says Healy: "We were inspired by the idea of the Teddy Bear's Picnic – you know the song lyrics: 'If you go down to the woods today, you're sure of a big surprise.' This is a pleasant surprise for everyone who comes here. For the children, they see this and think: 'This looks interesting.'" But it's not just children who enjoy these unusual spaces. "The lead psychiatric consultant has said that everybody is intrigued by the building, particularly how soft it is. There are no sharp corners. People are constantly being drawn into it." Healy says that the positive response to this building has been "far greater than we expected".

In making large institutions feel non-institutional, form, finishes and detailing can do much to break down the clinical atmosphere, but so can strategic separations of pathways – for staff, patients and visitors – by facilitating as much openness and collaborative exchange as possible. Swedish practice BSK Arkitekter has come up with a fascinating new model in designing the HELIX Forensic Psychiatry complex just outside Stockholm (see case study). While security is a priority, key details ensure that is isn't intimidating. With a large, glazed public entrance, visitors enter through a standard – not high-security – glazed doorway with the receptionist visible from across the paved approach; security doorways are placed beyond reception. Staff have their own copper doorway, leading to a bright, welcoming atrium entrance that provides ample daylight and views in to the adjacent administration block, while a cafeteria, conference rooms and gym enhance social networking and cross-disciplinary co-operation.

For anyone still questioning the value of carefully considered, emotionally intelligent design for mental health service users, workers or facilitators, SERICC's Sheila Coates now has six years' worth of observation to add to the cause. The calming, non-institutional space "enables the counselling to proceed in a very positive way," she says. And the quality of their building has also benefitted their relationship with partner agencies: "It enables them to take us more seriously. They see us as a proper organisation. So it has had a definite impact on promoting what we do." In a field still hampered by stigma and taboo, such benefits are priceless.

Veronica Simpson is an architectural writer



The leading Edge

With its remarkable period of capital investment starting to slow, Australasia is assessing the progressive healthcare facilities it has created, and working out how to build on excellence for the years ahead, writes *Emily Brooks*

Australia delivered a world first in preventative healthcare last December when it switched to 'plain packs' of cigarettes. In fact they are far from plain, their uniform olive-green boxes framing a selection of grim warning and gruesome images – this is design as a blunt instrument.

The World Health Organization praised this audacious stab at the improvement of public health; Australia seemed to have reached the next level of the game. New Zealand announced in February that it plans to follow suit (it already has some of the strictest tobacco controls in the world, and has pledged to be completely tobacco-free by 2025).

This sort of pioneering thinking around health is mirrored in Australia's recent healthcare building spree, the result of increased demand coupled with the need to refresh worn-out facilities, many of which were built during the post second world war population boom. As a result of this generational renewal of health assets, some internationally recognised facilities are at or nearing completion, including the Royal Children's Hospital in Melbourne, Western Australia's Fiona Stanley Hospital, Gold Coast University Hospital and Queensland Children's Hospital (see case study).

Despite – or perhaps because of – the region's relative remoteness from the rest of the world, Australasia seems to have been able to cherry-pick the best of healthcare design ideas. "Australians are quite good at learning from the world," says Ron Billard, director of Billard Leece Partnership (BLP). He says of the firm's research for the Royal Children's Hospital, designed in conjunction with Bates Smart Architects, "we did a tour five or six years ago of all the hospitals at the time, and we've done a few since. And we were surprised to find that people in America hadn't been across to see what Europe was doing, and surprised to see that people in Europe hadn't been across to see what America was doing."



Architects: Jackson Architecture

Client: Austin Health

Cost: AUS\$195m (£134m)

Size: 25,000sqm

Project completion date:

June 2012 (stages 1 and 2a); mid-2013 (stage 2b)

Main contractor: Leighton Contractors Pty Ltd

Olivia Newton-John Cancer & Wellness Centre, Heidelberg, Victoria, Australia

The Austin Hospital has a long history of cancer treatment, and was by 1935 the largest cancer hospital in Australia. Today, following a fundraising campaign spearheaded by much-loved actress (and breast-cancer survivor) Olivia Newton John, Austin Health can offer one of the most innovative cancer centres in the country. The brief was for a 'feelgood' experience for patients, with natural light and open spaces, typified by alternative treatment areas such as the oncology day room, with its a huge bay windows overlooking a magnificent mature tree.

The emphasis on 'wellness' was a key part of the brief, with emotional, social and spiritual support seen as vital functions alongside clinical treatment. The 1917 Zeltner Hall – originally a recital hall for patients – is now a dedicated wellness centre, a domestic-looking education and social space with a verandah overlooking a landscaped courtyard.

The facility is being completed in three stages to coincide with funding availability, with the radiation oncology structure (four bunkers), ambulatory oncology unit and wellness areas among the spaces already completed. The final stage, due to open mid 2013, will see the opening of shell-stage research areas and the addition of 92 inpatient ward beds (64 acute oncology beds and 28 palliative care beds), plus administration and clinical trials areas. Layout and wayfinding have been devised not only to be intuitive for patients, but with a translational remit, for better connectivity between research and clinical spaces. As Jackson Architecture describes it, the aim was for "an overall impression of openness to encourage staff to enlighten each other, so avoiding the desperate 'territoriality' of departments generally apparent in most large Australian hospitals."

Gunther De Graeve, managing director of strategic consultants Destravis, says that "in the last round of major hospital development in the late 1990s and early 2000s, Australia did start to look outside, but I think it missed a lot of new trends. This time, they're really being understood." He thinks that Australia has picked up on "two very identifiable trends", firstly, the evidence-based design largely coming out of north

America – "natural light and greenery are the obvious ones, but we're also starting to look at evidence relating to certain flow optimisations, and on sound and acoustics" – and the more experimental approach coming from northern Europe, in particular Scandinavia and the Netherlands. "The Dutch hospitals are based on simplicity and great functionality combined," he continues. "And the Scandinavians have pulled that off as well – but what we also learned from them is how they integrate their health with their communities; how they make it part of the existing texture of the cities."

People come from many countries, and they all bring something with them

come a bit after the European and American wave. Key personnel are now moving across and bringing their knowledge with them," says BLP's director Mark Mitchell, adding that this doesn't just include the design side, but construction giants such as Skanska. Woods Bagot's project director Douglas Roxburgh likens the talent pool to "a crucible". He says that "some new models of care – for example, the combination of services within departments, like when a patient receives a scan and operation sequentially, in the same room – have been quick to develop, partly because of the international population that is modern Australia, both on the medical and design side. People come from many countries, and they bring something with them."

So, if Australasia is writing a new language of healthcare design, what exactly defines it? Many architects point to facilities' unique sense of place – not just echoing the generic geography of a region but a building's exact surroundings. This particularly refers to the way they reflect and respond to nature; Australia is blessed with a good climate and abundant natural beauty, so it is not hard to see why this has come about.

At Mackay Base Hospital in Queensland, Woods Bagot and BLP's redevelopment scheme (see case study) sees the orientation redirected towards the adjacent Pioneer River. "There's a culture and history specific to this area, and it's different to the culture that might exist in Brisbane, or in Cairns – every small centre is incredibly proud of its heritage of the last 150 years," says Roxburgh. "Communities feel a need that the building should

Jon Linkins



express their particular environment, and we went out of our way in the early design stages to try and bring in the colours and contrasts that we took from the area."

Gunther De Graeve says Australasian architects are also particularly adept at following through with the quality of their buildings, inside and out. "Ten years ago, internal planning was one thing, and the architecture of the building was another; but we've become aware that the two need to blend in so strongly with each other. Architects have started to show an interest in the clinical rooms, and trying to lift up the design of those" – he cites BVN's Robina Hospital in Queensland, where the operating theatres feature wall-to-wall landscape photography – "but it's not just those things, it's the patient spaces, the staff spaces. Before, it might have had a shiny facade, but on the inside in was just a dull hospital, very institutional."

Making hospitals feel less institutional is at the heart of many projects, together with a desire to create buildings that sit at the heart of the communities they serve. "We are seeing hospitals starting to reclaim their role as important symbolic and civic touchstones within our communities," says Corbett Lyon, Lyons Architecture's global director, health projects. "We are also seeing hospitals playing a more direct role in supporting health and many new hospital designs are 'opening out' to re-engage with the communities they serve. Hospital design is again being looked at in the same way that we think about libraries, courthouses, town halls and other public buildings that give our communities a sense of place and meaning."

Knitting in to the urban fabric

At Ballarat in Victoria, BLP has just completed a AUS\$55m integrated cancer centre, part of a wider masterplan for the city's regional hospital. "We've tried to make a very approachable and caring environment for people who have cancer, and their carers," says Ron Billard. Striking as it is – a five-storey glazed tower rising up next to a red-brick 1920s hospital building – the fact that it sits at the heart of the urban fabric

Central Queensland University Health Clinic, Rockhampton, Queensland, Australia

Some 400 miles north of Brisbane, Rockhampton is the home of Central Queensland University's largest campus; this new clinic, opened in 2012, is the campus's first public building, a space intended to welcome patients as well as provide an education and training hub for students. Its facilities include both specialist and generic consultation rooms for disciplines such as podiatry, occupational therapy and speech pathology; several gyms, for exercise physiology; an orthotic lab; and an activities of daily living (ADL) space where patients recovering from strokes, for example, use a kitchen and bathroom space to relearn everyday activities.

The building rests beautifully within its bushland setting. Architect Emma Healy of Reddog Architects explains that it "sits between two landscapes; to the south-east a protected landscape of wild eucalyptus and marshlands, to the north-west a sister landscape of curated angophoras on a lawn. The clinic takes advantage of the former enshrined green outlook by locating significant clinical functions on this edge so that patients benefit most from the context." A facade of gold and yellow undulating vertical elements echoes the shape of the trees but is bright enough to act as a beacon for patients, while a wall of cream, white and yellow brickwork makes reference to "the mottled eucalyptus bark and the dappled shadows cast by their canopy".

The healing potential of gardens and landscapes became a key part of Reddog's approach to the layout, with the best views being given over to the clinical areas; open-ended corridors keep a constant connection to the outside world, and there are skylights and clerestory windows to let in even more light. Healy says that the building was "conceived from the inside out".

Architect: Reddog Architects

Client: Central Queensland University/Queensland Health

Cost: AUS\$6m (£4.1m)

Completion: 2012



Billard Leece Partnership's just-completed AUS\$55m Regional Integrated Cancer Centre in Ballarat, Victoria

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Built in 1917, Zeltner Hall now acts as a non-clinical wellness centre for the Olivia Newton-John Cancer Centre, Victoria

is important, its central location somehow helping to soften any feelings of anxiety in a way that driving up to a large out-of-town facility could never do. The red-brick building, once the outpatient building, is now a drop-in cancer advice and wellness centre, with its own separate entrance, "where you can walk off the main street, almost like disappearing into a shop," but linked to the light-filled central atrium of the new building at the rear.

Jackson Architecture's Olivia Newton-John Cancer Centre in the Melbourne suburb of Heidelberg (the final phase of which is approaching completion) also features the conversion of an historic building into a non-clinical wellness centre, separate but linked to the main hospital. In this instance the historic building is the 1917 Zeltner Hall, originally a recital hall for patients. The analogies with the UK's Maggie's Centres are obvious, in its domesticity – there is a kitchen, and a kitchen table for gathering, plus sofas and armchairs – and its contact with nature outside, in this case a large courtyard garden. The emphasis is on whole-body 'wellness', not just disease treatment, with the provision of complementary therapies to work in tandem with clinical treatment. The clinical building also wraps around the restorative courtyard space, and inside the layout and interiors work hard to create a welcoming non-institutional feel, with domestic touches such as pendant lighting, bamboo and carpeted flooring, and timber panelling.

Brisbane's Reddog Architects cite Maggie's as an influence (specifically, OMA's Garthnavel centre in Scotland) on the design of its first healthcare building. It's not a cancer centre, however, but a clinic on the campus of Central Queensland University (CQU), a building for local patients and a training ground for students of occupational therapy, physiology, podiatry, nutrition and more. As the first-time designer of a healthcare building, architect Emma Healy says that "the most significant challenge was overcoming the restrictions imposed by the medical and institutional standards to generate a building that felt welcoming and relaxed. With a fairly restricted internal palette of resilient floor finishes, smooth white walls and ceiling tiles, careful colour selection and the strategic placement of openings was our primary tactic."

Many new hospital designs are 'opening out' to re-engage with the communities they serve

Looking for talent

By attracting students to its state-of-the-art new clinic, CQU and Queensland Health hope that students will be more likely to stay in the area for the rest of the working lives. Creating appealing settings for staff is a recurring theme, especially in Queensland, whose population is set to rise and whose northern reaches are some of the remotest parts of the country. Mackay Base Hospital for example, is creating a "staff retreat" as part of its redevelopment, comparable with a business-class airport lounge, with food and beverage stations, a gym, overnight accommodation and a large barbecue-equipped deck with river and mountain views.

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Ron Billard says that the federal decision to direct funding into regional hospitals has as much to do with keeping those smaller urban centres economically viable as it has with creating a convenient local base for patients. "In towns like Ballarat or Wagga Wagga, with populations of around 50-80,000 people, the biggest employer tends to be the hospital, and they are at risk of losing employment opportunities if all the medical stuff gets centred in the capital cities. So there has been a trend, just in the last five years or so, of reinvesting in town hospitals to make them centres of employment and attract professionals and specialists. I think it's a really important initiative."

GP Super Clinics are also concerned with creating fulfilling employment opportunities away from major city hospitals. An AUS\$650m federal initiative, they are intended to strengthen primary care and keep patients out of hospital, bringing together GPs, practice nurses, allied health professionals and other healthcare providers (which could be public or private, such as dentists) to deliver services at a local level. The model of continuous care, and the sense of being at the heart of a community, is also an attractive option for staff; as Ron Billard says, "It's trying to say to doctors, you don't have to go

to a big hospital to have a good career." BLP has designed a number of these clinics; its 1,500sqm Kardinia Health Super Clinic in Geelong, Victoria, belies its size with courtyards and broken-up waiting areas, demonstrating that even in smaller healthcare buildings the desire is there to make things 'human scale'.

In New Zealand, the equivalent is the Integrated Family Health Centre (IFHC), which have the same integrated, multi-disciplinary approach. "It's primarily about private investment in public health," says Darryl Carey, director at Chow:Hill and chair of the New Zealand Health Design Council. "The Ministry of Health is encouraging local businesses and health providers to invest in primary and community services, helping that to happen by providing some seed money, and by funding expertise and consultancy work to get them off the ground. So we're part of a consortia that a local group can call upon to provide advice and scoping, to get a project up and running."

One such project is Te Whareora O Tikipunga IFHC in Whangerei, opened at the beginning of April. The facility is culturally supportive to

Ballarat Regional Integrated Cancer Centre, Ballarat, Victoria, Australia

This cancer centre follows a trend for remodelling Australia's regional hospitals, to attract staff where there would otherwise be fewer opportunities, as well as cope with increased demand for services. The new centre consists of a refurbished red-brick 1920s building abutting a sharply contrasting glazed five-storey structure.

The four radiotherapy bunkers (two for use straight away, the other two for when demand increases) have been placed on the ground floor of the new building, balanced by a light-filled atrium at the entrance, with lots of timber used in the bunkers to soften the space. "Due to their technical nature, cancer centres often require large blank walls, whereas other areas need big sweeping views, so it was about trying to balance those in the urban grain," says BLP's director Mark Mitchell. The hospital is on a hill, and the oncology unit, one level up, enjoys views across Victorian Ballarat.

The 1920s building, formerly the outpatients, is now a drop-in wellness centre for patients and their families. It has its own entrance off the street, but it links to the main atrium at its rear.

Architect: Billard Leece Partnership

Client: Department of Health/Ballarat Health

Cost: AUS\$55m (£38m)

Size: 8,500sqm

Completed: 2013



Tony Miller

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Laguna Honda Hospital, San Francisco, USA



University College Hospital, Macmillan Cancer Centre, London, UK



Tseung Kwan O Hospital, Hong Kong, China



Cairns Base Hospital, Queensland, Australia

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local Maori and Pacific families, with a large room at the front of the building for *whanau* (extended family), who can be present during the consultation. It is typical of a more enlightened approach to healthcare for indigenous populations. Life expectancy is 16-17 years less for indigenous Australians, and closing this gap is a federal priority. Healthcare settings where indigenous people feel better understood are playing their part. At Mackay Base Hospital, says Douglas Roxburgh, "it was important to ensure that the local indigenous population was considered equally with all other local populations. This is particularly evident in the mortuary, which has an external courtyard garden, to allow for the usual processes of death to be observed by all members of the community." (In Aboriginal culture, the deceased are laid out in the open, rather than placed in an enclosed space.)

Striving for world-class

Australasian healthcare design is characterised by a strong innovative streak. At Queensland Children's Hospital, there will be a new "no wait" triage system in the emergency department with patients immediately split in to four groups depending on need; also new is an interlinked 'pod' concept for the ICU that Corbett Lyon describes as "enclosed 'roomicles' rather than the traditional open-bay cubicle. This gives better

Mackay Base Hospital Redevelopment, Mackay, Queensland, Australia

Mackay Base Hospital is nearing the end of a three-stage programme of upgrading that will see the major consolidation and expansion of its campus, with the number of beds rising from 120 to 320. The five years it will have taken to complete the works reflects the complex logistics involved when a hospital needs to remain operationally active throughout.

The remodelling has made many hospital buildings much more visually engaged with the adjacent Pioneer River, with inpatient wards shifted so that they enjoy river views. The sub-tropical climate – high temperatures, and high levels of rainfall – has had a "pivotal impact on the look of the building, and the specification of roofs, facades and structure," according to Woods Bagot's Douglas Roxburgh. "There are also lots of external spaces to provide shading, both for staff and patients, and to reduce heat loads on the windows." Earthquake-proofing and the need for a core part of the hospital to still be operational in the face of a natural disaster such as a cyclone further complicated the brief.

Regional Queensland's population is expected to grow in the next 25-50 years, so a capability for expansion was critical. "We made provision for something like 30% over and above the current floor area and parking capacity. It means that the structure is designed so that it can be built on top of, or extended to the side, or that it can be refitted or reorganised entirely," says Roxburgh; some of these expansion plans have in fact already been implemented. Providing an environment to attract and retain staff in this remote part of the country is a priority for Queensland Health; accordingly, the hospital's "staff retreat" is a high-quality space with dedicated food and beverage areas, relaxation spaces, overnight accommodation, a gym, and external balconies with river views.



Architects: Woods Bagot and Billard Leece Partnership

Client: Queensland Health

Cost: AUD\$407m (£280m)

Size: 40,000sqm

Completion: Late 2013

privacy for patients and families but also allows the walls to be folded back to provide a single contiguous treatment area."There will also be a 'long day lounge', a breakout space that caters to families who have appointments that unavoidably spread across the day.

In New Zealand, the rebuilding of Christchurch's two hospitals following 2011's earthquake is highly anticipated. Chow:Hill has been involved in the preparation of the business case, approved by government in February, and is now in the process of finalising conceptual design work while the procurement of the project teams occurs for both projects. "The DHB [district health board] is very determined to achieve an innovative solution, not just a standard solution," says Darryl Carey. "For about six months it has had clinical and design teams working on what it's calling a 'design lab' – effectively a great big warehouse, with cardboard walls that we can move around to simulate different environments. We're working with users to work out optimal options for inpatient design, and trying some really innovative ward design."

Corbett Lyon says that the culture of innovation in Australia has much to do with having enlightened clients. "Hospitals have traditionally been an architectural type that has been very resistant to change – so this confluence of clients looking for innovation and architects and designers who are able to bring informed creative thinking to the process has been a unique feature of this period." There are concerns, however, that the rise of PPP as a procurement method may dampen this spirit, because of the way it minimises any level of risk. De Graeve distinguishes between attitudes before and after the financial crisis: "Before, PPPs were very much focused on the comparative design being the basic deliverables, and then people were competing on anything over and above that – value added – but now the attention has shifted towards value for money, and it becomes a price offering solely." He feels that as a result, truly landmark projects like the Royal Children's Hospital could not happen again. Queensland's Sunshine Coast University Hospital is the currently the most high-profile PPP in Australia, a AUS\$1.98bn tertiary teaching hospital that will be built on a greenfield site north of Brisbane. Architectus Brisbane and Rice Daubney Architects have partnered with Lend Lease to deliver the hospital in late 2016, with a masterplan by Conrad Gargett Riddel.

What next?

The Australian building boom – at least when it comes to acute facilities – is winding down, and it is time to look ahead. Architects have a decade of experience and expertise to draw on, and there are hints that that expertise could be ripe for export. The UK's NHS recently looked to Flinders Medical Centre, a public teaching hospital in Adelaide, when it wanted to learn lessons about Lean thinking to improve quality, safety and throughput. BLP is

**Australia now
has something
tangible to offer in
terms of the global
debate about
healthcare design**





Sunshine Coast University Hospital – Australasia's biggest PPP health project

for us is to provide buildings that can support the delivery of the growing expectations of health services against increasingly constrained budgets – providing for appropriate levels of care that relate to need," says Conrad Gargett Riddel's Bruce Wolfe. Recent reform means that internal funding for health is now awarded based on efficiency, rather than number of beds, which has quickly shifted the focus on to how to design facilities with better throughput.

The debate will move from acute to sub-acute facilities ("We've done absolutely nothing about it; it's the elephant in the room," says De Graeve), and even away from hospitals altogether. With such a scattered population and scarce resources, the region must look to more home-based services, and strengthen its focus on health promotion. "We have the hospitals in control; the bit that's out of control is everything else," says De Graeve. "Australia has a beautiful, open, natural environment, but in our planning we are not embracing that. Our cities are not walkable. We could be the healthiest nation on the planet because of our climate, but we have turned our back on that opportunity. Our planning and health departments need to talk to each other, and once that happens, and that energy is created, the solution will start appearing. Things will start to happen."

Emily Brooks is an architectural writer

Brisbane's new children's hospital will be one of the city's most striking landmarks. Its central concept is that of a "living tree", with two atria as the trunks, and projecting lateral spaces as the branches. Purple and green sunshade blades adorn the facade, derived from the colour of the bougainvillea in the adjacent parkland. "Colour hasn't been introduced for colour's sake," says Corbett Lyon, global director, health projects at Lyons. "We saw it as a way of directly relating the building to its context – it's a very Australian/Brisbane building – to give it a strong local meaning."

Extensive research has fed in to the design, from international best practice to the study of patient and staff movements in the two existing Brisbane children's hospitals. Innovative new service-delivery models include a "no wait" triage system in the ED, where patients are immediately assessed and filtered into four treatment areas. Surgical and medical admissions have also been split up, with each having a separate lounge-like lobby on the building's upper floors.

The hospital offers up a patient-centric approach. "The central brief was very wise: it centres on the sick child and their family," says Conrad Gargett's Bruce Wolfe. "A child in the care of at least one parent often has an entourage of siblings and other family members. As a consequence, bedrooms are able to accommodate family members, and entrances are located where there is a peaceful atmosphere. It also means that the service will come to the patient wherever practical."

bidding for a job in Hong Kong and sees a future in partnering with architects in Asia to design hospitals there.

"We have made an enormous capital investment here over the last five to 10 years, evidenced by new hospitals designed using these new approaches and new thinking; putting patients at the centre, and designing environments to support health and wellness," says Corbett Lyon. "Many of these new facilities are already being looked at by service providers, clinicians and researchers from other countries. There is no doubt that Australia now has something tangible to offer in terms of the current global conversation about healthcare design." July's 9th Design & Health World Congress, to be held in Brisbane, will offer a perfect platform.

Finance is, as ever, the biggest challenge, in New Zealand even more so than Australia. "The challenge



Queensland Children's Hospital, Brisbane, Queensland, Australia

Architects: Lyons Architecture / Conrad Gargett Riddel

Client: Queensland Health

Cost: AUS\$1.5bn (£1.03bn)

Size: 71,000sqm

Completion: Late 2014



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ABUJA, NIGERIA



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PROJECT: ENUGU REGIONAL AIRPORT
ENUGU, NIGERIA



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PROJECT: ALBOW GARDENS
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COMPLETED 2000



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PROJECT: OPOLLO HOSPITAL
BAYELSA, NIGERIA
COMPLETED 2009



TERtiARY HEALTH CARE FACILITIES

PROJECT: CHRIS HANI BARAGWANATH HOSPITAL
JOHANNESBURG, SOUTH AFRICA
COMPLETED 2009

Bristol cancer-care centre blossoms

BDP has announced its design for a £4m cancer care centre for North Bristol NHS Trust and University Hospitals Bristol. Sharing a site with Southmead Hospital (an acute superhospital that is also BDP-designed, due to open next year), The Cherry Tree Centre will house dedicated facilities for breast cancer screening and diagnosis as well as a separately accessed Macmillan Information Centre that will dispense advice about all types of cancer. The facility will sit across a courtyard from the main hospital and will incorporate existing historic buildings – stripped back to reveal internal detailing, with double-height, top-lit spaces being used as waiting areas, a seminar room and admin spaces. An extension will link the existing buildings and create a new arrival space, as well as allowing for the more highly serviced clinical rooms to be constructed in a more flexible, adaptable way. Outside, the square will be landscaped, with the existing cherry tree that gives the facility its name given protected status.



Helsingborg Hospital extension

The southern Swedish city of Helsingborg is dramatically extending its hospital, to a design by Schmidt Hammer Lassen architects. The firm won a competition to design the 35,000sqm extension, with key parts of the brief including flexibility, a clear layout, human-scale design, and plenty of daylight and green space. "The building is expressed in one sculptural form, which houses three areas of activity: the outpatient clinic and laboratories in the lower and compact levels of the building, while the top levels, containing the psychiatric ward, open up to a more transparent structure," says Kasper Frandsen, associate partner at Schmidt Hammer Lassen. The layout is arranged along a central spine that acts as an urban street, with intersecting squares and views out to green courtyards. Particular attention has been paid to the design of the psychiatric ward, with a clear layout that incorporates sheltered inner courtyards to make patients feel calm and safe. From the upper levels, patients have a panoramic view over the city and the Öresund strait that separates Sweden and Denmark; this in turn allows plenty of daylight into the rooms.



Storehouse to health hub

Built as a Victorian furniture storehouse and then turned into office space in the 1970s, The Montefiore Hospital now has a new lease of life as a cutting-edge private healthcare facility. IBI Nightingale's revamp of the building in Brighton, East Sussex, for Spire Healthcare has seen the structure retain its original handsome facade, with the addition of a cedar-clad and brick extension to the rear. The hospital's facilities include 21 en-suite bedrooms, three operating theatres and chemotherapy suite, as well as a dedicated restaurant and roof terrace just for staff.

Spire Healthcare's estates and buildings project manager Mike Rawlinson says that converting the building to a modern healthcare facility at first seemed like an "impossible challenge" but adds that IBI Nightingale "rose to that challenge, maintaining the character and features of the original building and at the same time creating a state-of-the-art hospital with boutique hotel comfort." Architect Richard Ager of IBI Nightingale reflects that the experience was "technically demanding, yet incredibly rewarding for all involved. We've enjoyed solving the architectural problems presented in novel and interesting ways. The result is we hope, an inspiring hospital with a unique identity."



Richard Chivers

Two hearts beating

WHR Architects has completed two specialist heart hospitals, both in Texas. Located on the campus of Trinity Mother Frances Hospital, The Louis and Peaches Owen Heart Hospital (pictured opposite, top) is named for its benefactors, who donated US\$18m to build the 14,000sqm facility. WHR's Tasha Gupta, who led on the design, says that the brief was to build "a world-class facility that would combine the latest technology and equipment with a welcoming, timeless design in order to deliver the highest quality of cardiac care". Special features include rooms that flex to meet the needs of patients as their healing progresses so they don't have to move, an oval-shaped chapel, and meditative gardens.

Meanwhile, at the Texas Heart Institute in Houston, the emphasis was on research and development as WHR were charged with designing new laboratories for regenerative medicine specialist Doris A Taylor, PhD. The labs (pictured opposite, bottom) feature a customised bench that specifically supports her team's work in 'whole organ decellularisation' – removing existing cells from hearts of lab animals, leaving a framework to build new human hearts. A procedure room, conference area and stem-cell biorepository make up the remainder of the newly designed space.



Mental health upgrade for Liverpool

Medical Architecture and Arup have teamed up to deliver a £28m mental health facility for Liverpool's Mersey Care NHS Trust. Located on the site of the city's former Walton Hospital, it will serve adults and older people with acute mental health needs and dementia. Its patient activity rooms and 85 single inpatient rooms will be complemented by some major new art commissions, the result of a collaboration with Tate Liverpool. Bob Wills, project director at Medical Architecture, said "It is great to be delivering a scheme for such a forward-looking client, where staff and service users can get on with the business of healing in safe and uplifting surroundings."

Surrey vet school won by Devereux

Devereux Architects has won a competition to deliver a veterinary medicine school for the University of Surrey. Comprising three complementary buildings – an academic building, a veterinary clinical skills centre and a veterinary pathology unit – the 9,000sqm facility will sit on the university's 150-hectare campus just outside Guildford.

The academic building will provide world-class teaching and research laboratories, lecture theatres and flexible breakout spaces organised around a common shared atrium; naturally ventilated office and teaching spaces will sit to one side of the atrium, and research spaces and lecture halls along the other. Sustainability features include a heat-recovery system that will recycle the heat from the rising hot air in the atrium. The building will be completed in 2015.



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Fresh-air thinking

Following successful testing, secure window and door specialist Britplas is set to launch a sash window that lets in fresh air while preventing “the passage of people, vermin or insects”. Rapidvent incorporates a steel mesh within the window, and is intended to provide an alternative to other models of securely opening window, such as those fitted with restrictors. The testing by WSP Sustainable Building Group, comparing the product with a top-hung window with 100mm restrictors, showed that the Rapidvent delivered a 10°C reduction in peak internal temperature as well as ten times the natural ventilation rate, while only marginally reducing the level of daylight. It was also found that the fresh air penetrated significantly further into the room. Britplas envisage that the product will be useful in education, healthcare and mental-health settings, such as Clifton Hospital in Nottingham (pictured) – in short, any building where comfort and security are needed in equal measure.



Inside knowledge

Louvre blinds are a useful way to instantly control light and privacy in healthcare settings, but they have some down sides – they gather dust (an infection control issue), require maintenance and can mis-align over time, compromising patient privacy. US firm Unicel Architectural's Vision Control windows and doors offer a solution to these potential problems, by hermetically sealing the louvres inside an insulating glass unit that has been specially designed with infection control in mind. Like ordinary louvres, they can be angled for adjustable privacy, allowing the discreet observation of patients by medical staff while shielding them from broader view – but there are no cords, and the units are maintenance free.

Taking a new track

Gainsborough Specialist Bathing, maker of assistive bathing products such as powered baths for care environments, is expanding into new territory with the launch of a hoist ceiling-track system. The Glide 200 system is highly customisable, with a variety of track components that can lift and move patients within or between rooms, and it can be wall or ceiling mounted. It is compatible with a range of slings and has a number of other optional attachments, for example digital weighing scales or a stretcher. Gordon Farmiloe, managing director of Gainsborough's parent company Care in Bathing, sees the new development as a natural continuation of the firm's commitment to innovation, and says that Gainsborough "can now implement a total patient lifting and bathing system, from site assessment and design right through to installation and ongoing servicing. This will deliver far-reaching improvements within the care environment."





Design & Health Student Ideas Poster Competition 2013

BCEC, Brisbane, Australia, 10 - 14 July 2013



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Prize Categories

Category Building

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- Third Prize

Category (Industrial Design) Product

- First Prize
- Second Prize
- Third Prize

Category Landscape

- First Prize
- Second Prize
- Third Prize

Category Interior Design

- First Prize
- Second Prize
- Third Prize

The competition is open for entry from 1 April, 2013 until 15 June, 2013, when all completed submissions must be received. There is no fee for entering. Register and submit at awards@designandhealth.com

Photo: Royal Children's Hospital Melbourne, designed by Billard Leece Partnership and Bates Smart with HKS

Student-inspired Futures – Healthy Communities by Design

Introduction

A 'salutogenic approach' to health and urban planning developed as a preventative health strategy changes the focus to a more holistic understanding of healthy environments. The International Academy for Design & Health in partnership with the Australian Government State Health Departments, Australian Institute of Architects and collaborating universities is delighted to invite students to explore new ideas and perspectives on the planning and design of different building typologies that supports the development of healthy environments. For literary references, visit www.designandhealth.com

Conditions of Entry

Students are required to research current issues concerning the promotion of health within their community in one or more of the following four categories:

- a) Buildings
- b) Industrial Design
- c) Landscape
- d) Interior Design

The focus of submissions should be on how salutogenic design can improve health status in any public or social spaces such as healthcare, education, the workplace or in an urban setting. Participating individuals or teams should prepare a poster presentation that illustrates their thought process and demonstrates how the design solution supports the creation of a healthy environment for the community, or clearly shows an appreciation of the determinants of health and health promotion. The participants should

focus on designing a healthy environment utilising the salutogenic approach as described in the following paper, which can be downloaded at www.worldhealthdesign.com/Psychosocially-Supportive-Design.aspx. This competition is open to all built environment design students in Australasia and around the world at any level in their college or university careers. Upper level and graduate students are encouraged to compete.

Submission requirements

Entries must reflect the criteria of the competition and comprise the following items:

- i) Full contact details, including name, university, department and degree programme, address, telephone, e-mail and the categories being entered.
- ii) A digital copy in JPEG and PDF format (minimum 300 dpi high resolution). A maximum of four posters per person is allowed. One poster per category only. Shortlisted entrants will be invited to display a hard copy of their poster presentation at the 9th Design & Health World Congress. Each poster should be 1800 (H) x 950mm (W) size in Portrait format. All submissions will be posted online at www.designandhealth.com after the competition winners have been announced.
- iii) A word document, including a maximum of 400 words explaining the background to the poster idea; the objectives; the methodology; the results & the conclusion.

Candidates should send their submission digitally to awards@designandhealth.com by 15th June 2013.

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Design & Health Scientific Review

From Knowhow to Nowhere



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"improvements" in technology, transportation, and communication. Another future might be characterised by shifts in societal power – differing political, economic, and social priorities. Still another future might be a return to a simpler past.

We know that being alive means change – but in what direction? MIT historian of science Elting Morrison in his classic book *From Knowhow to Nowhere* refers back to the time of old English villages, the time of crafts persons, the time of major discoveries that did not shake society's fundamental structure. He observes that at that time people had a common cultural knowhow that was incrementally improved with minimum destruction and disruption, while today our great "advances" in the sciences and technology lead ... nowhere!

This question remains salient today for planners and designers – where are we going? Underlying much discussion of urban, suburban, building, and systems "improvement" is a quest for an earlier time, when the ecological, social, and technological dimensions of society were naturally aligned. This wished-for future lies not in increased complexity but in the cohesion and coherence of the past – or at least the imagined and ideal past we carry in our minds.

So perhaps in order to figure out where we are going or at least where we hope to be in the future we need to turn around and look behind us. Whether we are planning urban neighbourhoods in New York and Northeast England, shopping mall renovations, or using post-occupancy evaluations to identify fit-for-purpose objectives – we need to identify where we are headed. Perhaps we are headed in the wrong direction.

Architect, planner and creative thinker Buckminster "Bucky" Fuller pointed out in a public lecture I attended years ago that our sense of direction reflects a flat world, although we know better – up and down, he explained, ought to be replaced with "out" and "in" as in "outstairs" instead of upstairs and "instairs" instead of downstairs.

Perhaps it is time to reexamine what we mean by planning for the future – perhaps time is a Möbius strip where the past and future eventually come together:

As far back as I can remember planners, architects, and landscape architects have talked about the value of adaptability – creating environments in the present that can be changed in the future to respond to new needs, new requirements, new users. As far back as I can remember, there was always a missing ingredient – a sense of what future to plan for, to remain open to, to build in adaptability for. One future to plan for is greater and greater complexity – the result of



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From POE to design-in-use: **Benchmarking for health facility evaluation tools**

A shortage of post-occupancy evaluations means that planners and architects do not have access to accurate findings regarding healthcare buildings' performance. This paper proposes an alternative evaluation method that is robust, informed and easily shared

Adjunct Professor Ian Forbes, University of Technology, Sydney

When people talk about the health and social care system in any country, it is usually with an understanding that this is the most complex and rapidly changing organisational environment one can imagine. Built environments that provide for these services are equally complex. It is also acknowledged that this complexity is enhanced by the multitude of stakeholders who exercise power and preferences over it, not only concerning how and whom shall deliver services, but what allocation of resources will enable that to happen.^{1,2} One of the most expensive and therefore problematic aspects of the delivery system is the issue around capital investment in buildings, equipment and health facilities of many kinds.

It is well recognised that design decisions, when translated into physical facilities that accommodate health services and patient care environments, will need to be evaluated in order to determine if they are fit for purpose.³ It is well accepted that to avoid making repeated design mistakes and even alignment with strategic business intent through Building Performance Evaluation⁴ some form of systematic evaluation is required. Further, as funding for the major public hospitals in developed countries and almost all developing countries comes from government sources it means the long-term responsibility for maintenance and functioning of the assets falls to them. This concern for longer-term issues has resulted in the development of guidelines often to achieve regulatory controls but using evaluation processes to feedback findings to those who prepare the guides with refreshed knowledge.

There is considerable research and material written about the conducting of

health facility evaluations and specifically the methods used for Post Occupancy Evaluation (POE).⁵ It is not my intention here to go over the details of history or methods although it has been recognised⁶ that in the early evaluation studies undertaken for health facilities, they were of academic interest and initially conducted by academic researchers who investigated select issues in institutional settings (eg examination of different ward design, operating theatre systems, logistic handling approaches, etc).

What was achieved by these approaches?

Through the 1970s and 1980s this evaluative research was developed as a systematic methodological process giving better scope and rigor to facility studies. Initially derived from architectural concerns with social and behavioural issues as opposed to aesthetic ones.⁷ POE has now become an internationally accepted approach to learning from building experiences. Variables such as task performance, privacy, communication, safety and thermal comfort would all be considered. Evaluations were conducted by an individual or teams on site. They followed a specified format, which could range from a simple to complex investigation. Performance was typically measured on three dimensions: technical, functional and behavioural.⁸

Significantly the concern was with technical issues³ relating to the capability of the building and its engineering services systems as well as functional aspects such as the ability to achieve operational and clinical tasks efficiently and effectively. However it was the behavioural aspects that drew continued attention.⁵ This was the psychological and social aspects of user satisfaction and concerns related to better understanding the general wellbeing of

building inhabitants that had not previously been considered in the more typical areas of evaluation.⁸

The POE process itself

Today, POE is a well-developed field of scholarship and the process is taken for granted as the generally accepted approach to finding evidence about what should or should not be repeated in building solutions. This fits within the current wisdom surrounding evidence-based design using the quasi-scientific POEs to establish a more valid base for evidence-based design decisions.¹ The learning aspects of POE also fit within the current context of Continuous Quality Improvement.⁹

However, literature reviews show there is no industry standard or standardised methodology for building evaluation.⁵ The UK Higher Education Funding Council for England has identified six accepted methods for conducting POEs in its Guide to Post Occupancy Evaluation.¹⁰

Unfortunately the POE has been identified as having several major shortfalls. These include an unwillingness to participate by design teams and owners because POEs might discover a failure, which could lead to litigation. Essentially they are not being undertaken in sufficient quantity due to the large cost associated with undertaking them.³ Early POEs were done as individual research activities and were funded as such. In recent years, although many governments have put POE as an essential aspect to be conducted as part of the process of planning new facilities, they don't actually fund it sufficiently.

In addition it has been found there were several problems with Scotland's POEs.¹¹ It was difficult to obtain sufficient responses due to the time and participant effort involved in carrying them out, and there was a lack of comparability between old and new

facilities as most patients and many staff had not experienced both. It was also hard to avoid distortion of the results by low-level concerns – such as parking and availability of magazines – not being distinguished from more significant environmental concerns. Frequently the standardised questionnaires generated responses that were not usable in establishing how, or if, improvements had been made. The survey team was often hampered as the questionnaire format left little opportunity to capture comments, particularly if these did not refer to a specific question or issue.

Other barriers to sustained POE activity noted in the study conducted by the American Federal Facilities Council (FFC) of the National Research Council¹² are the fear by organisations and professionals of costly changes as a result of doing POEs and the lack of expertise in organisations to carry them out. Interestingly, architects have not taken ownership in pushing funding for or doing POEs and making sure their buildings are evaluated for effectiveness or satisfaction of the users.

Zimring et al¹³ suggests that historically, large organisations such as the US Court System, Disney, US General Services and other government bodies in the US and internationally have all carried out extensive POE programmes. However his research shows that organisational learning, defined as the ability to constantly improve routine activities, especially the inputs to operational processes, was not achieved. Members of project teams, project managers and clients were unaware of these POEs unless a special evaluation had been conducted to address a specific problem they were facing.

The implication of these concerns, whether right or wrong, are that evaluations are not being done and as a consequence changes that should be taken in future designs are not included. Too often anecdotal ideas and poorly assessed information are used to determine what should be included in future design solutions.

Decisions are based on the so-called expertise of senior planners or clinical staff. We might call this *eminence-based* design, not *evidence-based* design.

Understanding the evaluation methodology required

There are several objectives that have been described as driving the need for POEs



Figure 1: Stantec's Tunbridge Wells Hospital. The National Nursing Research Unit at King's College London is currently conducting a study focusing on how its 100% single inpatient rooms impact upon staff and patient experiences, costs, and staffing. Such studies are critically important – but all-too rare, for a number of reasons

in health facilities. Importantly the main concern is whether a building fulfils its design requirements.^{3,6} Perhaps what is missing in all the rigorous evaluation methodologies and processes developed for POE is the need for continuing discussion around why things have happened. These evaluations can provide a rich picture generated from many cases reviewed. Dialogue among participants involved in the review is perhaps the most important aspect of the evaluation. Seeking to find simplistic methodologies that will answer all aspects of health facility design is not possible.

The question that we need to address is whether there is an alternative evaluation method that will move design decisions forward and be more informed, yet robust, so that the findings can be implemented quickly and most importantly shared with a network of designers and clients.

Benchmarking as a method for design-in-use

Preiser, Rabinowitz and White⁸ suggested that we need to have a variety of such evaluation approaches reflecting the degree of effort involved. The types of

evaluation they described are indicative, investigative and diagnostic, in which each has a different objective:

Indicative: is a very general short-time evaluation in which the presence, frequency and location of factors that support or impede activities are identified and compared to the expert's knowledge. This is intended to provide an indication as to whether further work is then required.

Investigative: is a longer and larger evaluation with greater surveying and interviews and includes a literature review and comparisons with similar facilities to achieve a more comprehensive understanding of what has occurred and what can be adjusted.

Diagnostic: is a large research activity with multi-phasic studies over longer periods of time. They require a large team of investigators who employ triangulation or multi-levelled strategies for gathering data on numerous variables; they use basic scientific research designs; and they employ representative samples, which allow the results to be generalised to similar buildings and situations. In essence they are intended to develop new ideas.

In the review of evaluations undertaken at the University of Technology, Sydney (UTS) we believed that it would be possible to develop a more responsive evaluation method to overcome the time and cost issues of the full POE. Several POEs had been commissioned by the NSW Health Department over many years and as a consequence of their reluctance to release findings, none of these were able to provide learning to the wider health facility design community. However, they may have influenced changes in the Australasian Health Facility Guidelines (AHFG) issued by the Australian State Health Departments and generally used for both public and private acute hospitals across Australia.

There was, however, no feedback into the general design knowledge base that would benefit the many private firms engaged in public health facility design. If the only new knowledge is to be within the AHFG then this is very problematic. A debate has already occurred about how useful the guidelines are beyond being a regulatory control, essentially for cost control, and as a useful introduction to inexperienced designers and user groups. There are some serious concerns about their rigid



Figure 2: The EAT tool evaluates elements specific to dementia design, including familiarity and the reduction of unhelpful stimuli

imposition, thereby limiting the possibility for change and innovation in functional and physical solutions.

In order to provide faster feedback and some indication of factors to improve aspects of spatial design, a combination of the indicative and investigative evaluation approaches seemed possible while leaving diagnostic to more specific research. This approach required the setting to be the focal point and not a generalised evaluation tool. An examination of the various evaluation methods all assume a project-by-project analysis in which the questioning processes becomes broad enough to be used for any kind of health facility or department.

Good examples of current tools created to do evaluations in this vein are the British AEDET Evolution (Achieving Excellence Design Evaluation Toolkit)¹⁴ and ASPECT (A Staff and Patient Environment Calibration Toolkit).¹⁵ The AEDET Toolkit will enable the user to evaluate a design by posing a series of clear, non-technical statements, encompassing the three key areas of Impact, Build Quality and Functionality. ASPECT is a tool used either in an individual evaluation or in conjunction with AEDET. It is used for evaluating the quality of design for staff and patient environments in healthcare buildings. It delivers a profile that indicates the strengths and weaknesses of a design or an existing building.

These tools cover two very important elements of evaluation. They are simple to use, although it is recommended to have experienced users as well and they lead to a discussion of what is found in the evaluation, especially around the scores that are derived from them. In this way scores give a measurable value for what would otherwise be arguable and subjective interpretations. However they attempt to cover a very generic set of health facility situations and although many elements are of value, they don't address the many specific concerns of each department.

Consistent with the desire to focus on these concerns as requested by specialist nursing staff, the research team from the Faculty of Health and the Faculty of Design, Architecture and Building at UTS developed a series of evaluation tools. They were based on the following principles:

1. To focus on the design-in-use of a specific department, rather than use a generic tool
2. To identify whether the important elements of the space considered to be essential to the operational philosophy where present
3. To identify from literature reviews a benchmarked solution that would address the operational concerns of the members of staff and other users of the specific location



Figure 3: The EAT tool was used to evaluate the effectiveness of minor modifications to dementia-specific aged care facilities



Figure 4: 500 people living with dementia, across 40 residential aged-care facilities, were involved in the PerCen evaluation

4. To create a simple tool that compared the benchmarked solution with what was there to identify any deficits or benefits observed in the space
5. That the tool could be used by non-experts for self-assessment
6. That the tool would have a high level of inter-rater reliability after a short training time
7. The use of a scoring system that identified overall scores and sub-scores to enable discussion as to what might be changed or which aspect could be avoided in future design solutions.

In addition, the results could be shared as case studies for further research and the findings would stand as a hypothesis for others to test or challenge.

The dementia EAT tool

The first tool to be developed was for dementia-specific aged care design solutions. The opportunity to explore this arose from a request by the NSW Health Department for an assessment and solution to problems in small rural acute hospitals where the facility designed for acute patients at times had 80% of patients present with dementia co-morbidity and behavioural issues. Richard Fleming and Ian Forbes¹⁵ undertook the study and – based on an international literature review as

well as the findings from the pilot study on three rural facilities – they prepared a draft tool.

The elements included were specific to dementia facility design and inclusions in the tool were:

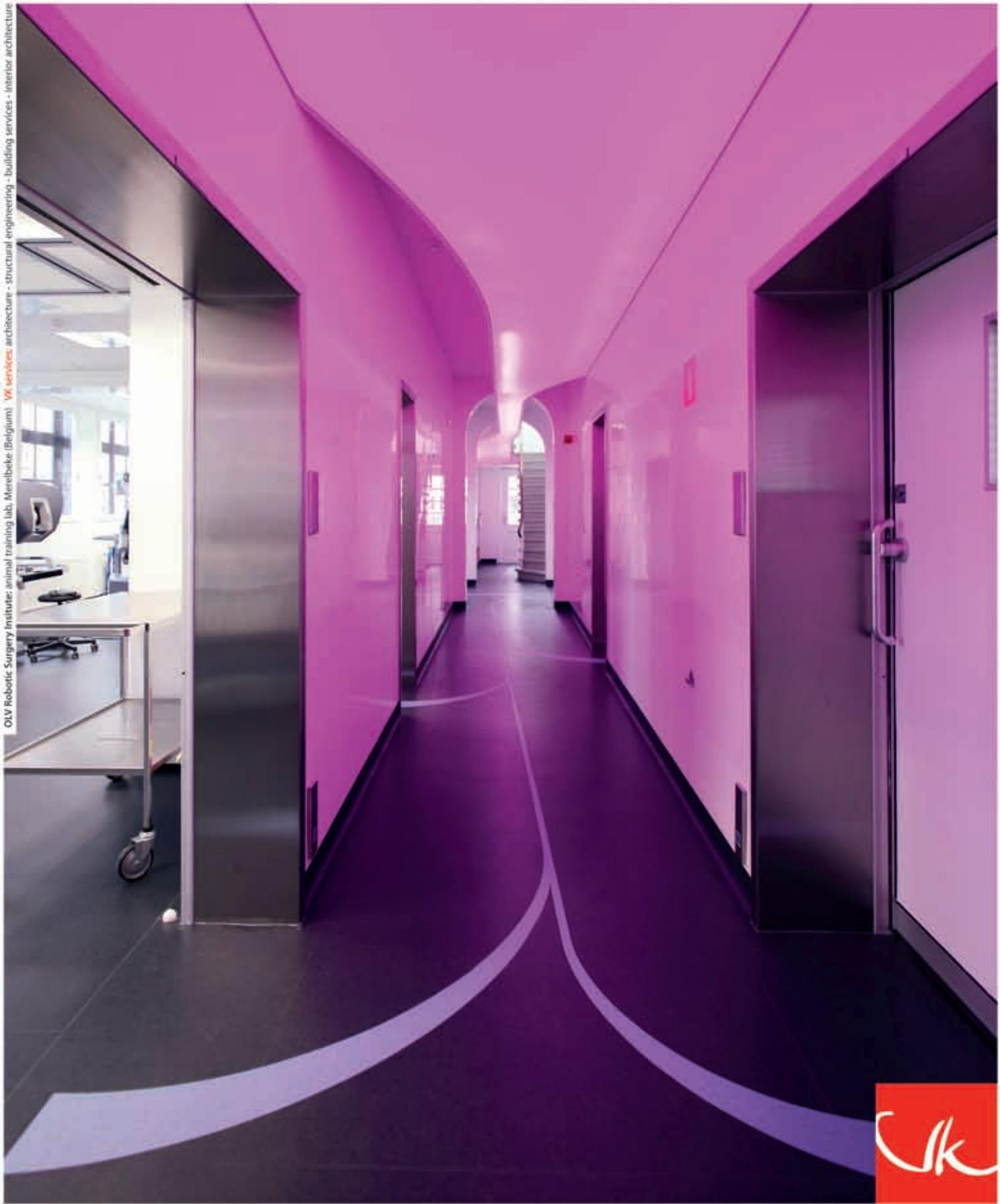
1. Be safe and secure
2. Be small
3. Be simple with good visual access
4. Have unnecessary stimulation reduced
5. Have helpful stimuli highlighted
6. Provide for planned wandering
7. Be familiar
8. Provide opportunities for a range of private to communal social interactions
9. Encourage links with the community
10. Be domestic in nature, providing opportunities for engagement in the ordinary tasks of daily living.

An opportunity to further develop the tool occurred when it was needed for a major research project undertaken by the combined teams from UTS, University of New South Wales (UNSW), University of Wollongong (UW) and Sydney University (USyd). The study, called PerCen, deliberately separated built environmental changes from staff training in Person Centred Care (PCC) to determine the separate effects from these interventions. Psychometric tests were used to determine before and after

changes in the quality of life and quality of care. This included 500 people living with dementia in 40 residential aged-care facilities that were randomly assigned to groups of 10, being: care as usual; person-centred changes only; physical changes only; and both changes.

The tool was then examined against other tools historically used internationally for evaluating dementia specific and aged care facilities. The tool was found to be valid and reliable.¹⁶ The tool was labelled EAT (Evaluation Audit Tool) and specifically compared to a similar tool developed at Stirling University in Scotland. Both tools were used and compared favourably in evaluating the 40 facilities in the pre-test round of this study. EAT was used in the post-test and final rounds. Further use of the tool continued in other studies with dementia-specific units and minor modifications were made.

Findings in the PerCen study showed the EAT tool was effective in evaluating the relationships between operations and space in terms of effectiveness when compared to ideal residential care. The scores were used in determining the required changes to meet patient-centred environmental principles at the different sites. Using the EAT scores, discussions were held with managers and care staff at each site to determine their dysfunction as identified by the tool and



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Figure 5: The BUDSET tool was developed to evaluate how birthing environments compare with the ideal

gaining agreement to the interventional changes planned. Due to limited funds in the grant, only minor modifications to the environment at each of the 20 intervention sites were possible.

In regard to the objectives of the evaluation tool, it has proved to be easy to use, with only a few hours of training by a variety of researchers and with high reliability in the scores. The results provided an overall score for comparison to other facilities and a series of sub-scores that highlight areas of concern in order to make changes at individual sites.

The birthing unit BUDSET tool

While the EAT tool was being tested, the researchers in the UTS Centre for Midwifery, Child and Family Health in the Faculty of Health, believed that the work with environments in dementia care would have similar results to those for birthing spaces. Their objective was to establish a birthing environment that was supportive but that was also unconsciously unobtrusive. The cues given to birthing occupants by the configuration of the spaces were either frightening or not comfortable. The objective was to develop a specific evaluation tool that would take the philosophy of ideal birthing spaces into account. This tool would determine

whether the hospital birthing units in NSW were currently achieving spatial benchmarks for such facilities, or to see what could achieve them.

The conceptual framework that applied to this was the theory of "birth territory", which was co-developed by UTS Professor Maralyn Foureur.¹⁸ Birth territory recognises the physical territory of the birth space over which jurisdiction or power is claimed for the woman involved, and builds on work of philosophers including Foucault. Birth territories affect how women feel and respond as embodied beings; safe and loved, or unsafe, fearful and self-protective.¹⁹

The resulting Birthing Tool, called BUDSET (Birthing Unit Design Spatial Evaluation Tool), was developed to respond to these specific issues and to see what aspects of birthing spaces were needed in support of the women and carers involved. A considerable literature was reviewed and the benchmarked elements from birthing design were included from this review.²⁰ Some of the findings showed that key elements of spatial design were lacking and needed to be considered specifically for Birthing Units.²¹ These were:

- Many women did not have access to facilities they felt were essential
- Women wanted control of their

environment – heat, light and especially who came into the room

- Women did not want to change rooms to give birth or to use a birth pool
- Women birthing in hospital were less likely to have helpful facilities than those birthing at home or in midwife-led birthing centres
- Women with good facilities were more likely to have a natural birth
- The objective was to remove the medicalisation of birthing.

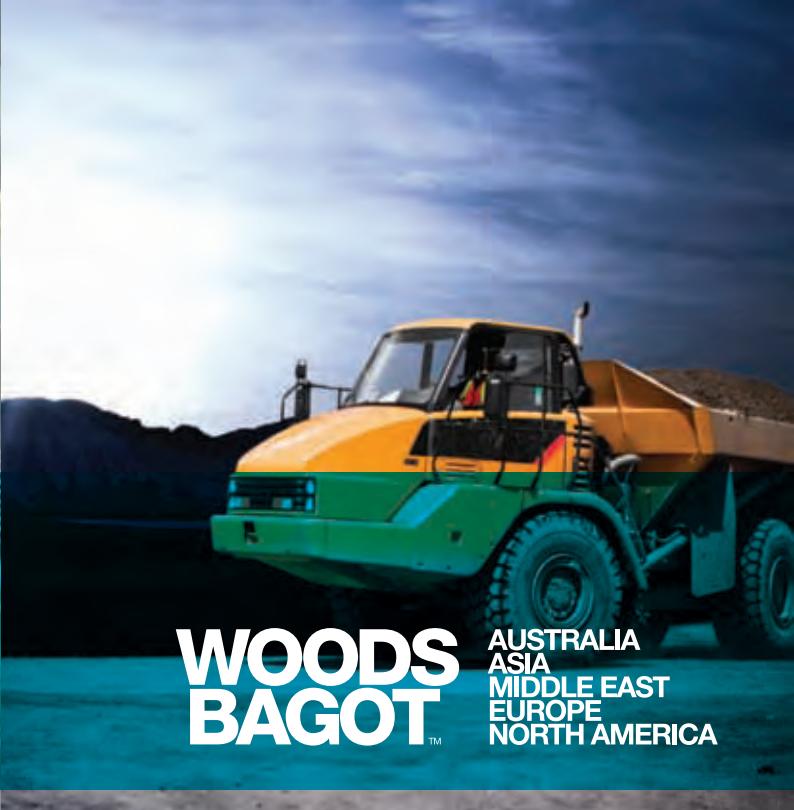
The above key principles underpinned the BUDSET and included provision for those elements.

A pilot study was undertaken to test the tool with seven facilities in one Area Health Service of Sydney that covered new and old, large and small units. The early results showed that some of the elements were not strong on inter-rater reliability when midwives' views did not match architects' views of adequacy. Changes were made to the tool for clarification of questions, and a PhD student carried out another study using the new tool, which had a more successful result.

In regard to achieving the principles for the evaluation tools, it was found that the BUDSET was easy to use, required little training for people not familiar with building design and gave a clear indication of where design-in-use was not matching benchmarks. It produced scores that were able to be discussed in recommending changes to physical space. The operational philosophy derived from the literature reviews was able to be accommodated.²² Additional research from a further study has now been completed, using videos of seven births that show how the spaces are actually being used. These observations show the use is consistent with expectations of the benchmarked objectives covered in the tool.

Further developments

The next set of evaluation tools are being developed for Mental Health and Emergency Departments. Collaboration between members of the Faculty of Design, Architecture and Building at UTS, Psychiatric Nursing in the Faculty of Health at UTS and a PhD student from the Australian Institute of Health Innovation (AIHI) at UNSW are currently undertaking a research



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project that will develop a Mental Health Evaluation Tool. The aim of this research is to investigate the relationship between the mental healthcare built environment and safety, thereby furthering an understanding of how the physical habitat may support or hinder therapeutic objectives and the building of interpersonal trust in clinical settings.

The main unit of analysis is a 10-year-old, 50-bed mental-health unit, which is currently being refurbished (the intervention) to improve the physical, social and symbolic environments of care. The embedded unit of analysis is the staff, and the aim is to understand how the built environment affects their perceived safety climate and propensity to trust patients.

The physical environment in the unit is recognised as deficient in terms of high social density, poor noise control, minimal acoustic privacy, institutional aesthetics, little access to nature, and poor functionality. These stress-inducing conditions are probably implicated in the intractably high seclusion rate in the unit's 20-bed observation ward. Both the number of patients secluded more than once during an admission, and the length of time that people are secluded (more than four hours) have been above averages. From this work the underlying philosophy that a benchmarked health facility required

will lead to an evaluation tool that complies with the principles for design-in-use evaluations in mental health.

An emergency department (ED) project taking the opportunity to develop a further tool followed a workshop on the design implications for emergency facilities following the introduction in NSW of the four-hour turnover rule. In the case of EDs, designers look for factors that affect the processing and movement of patients. From a facility perspective, the planning should seek to identify the essential physical resources, particularly treatment spaces and a variety of waiting areas.

Reviews of literature show that, regardless of the specific geographic location with their various external demand patterns, there were some key elements involved in benchmarked EDs. These involve the various patient flow models and how patients are moved in peak hours to holding, waiting and treatment. Access points and triaging are considered critical.

There are also the implications for information gathering and for continuous access to avoid repeated patient data collection using digital Information technology. This aspect is now a major part of the contemporary EDs.

Through further work in this area, a new tool will be useful for quickly assessing the current situation in NSW and the areas

where simple or larger changes to spaces will be necessary.

Conclusion

Although POE has been used for over 50 years and is accepted as the gold standard we believe that POEs are not being used enough or effectively. A short-form evaluation tool developed at UTS can achieve a great deal of what is found with POE results by examining design-in-use assessments when compared to benchmarked information.

It would normally be shunned as a time consuming process to examining each department and then developing information required to benchmark all health units. However we have found literature reviews abound, and the underlying philosophy needed to establish best practice for these benchmarks has usually been developed for the Briefs of Requirements. Various methods of evaluation are needed to achieve a variety of measured outcomes. We offer this as another one in the range.

Author

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Public funding:

An economic assessment of healthcare capital investment

While the costs of health infrastructure investment proposals are relatively straightforward to quantify, the resulting health benefits are much harder to value. This paper describes New South Wales Health's experience and the assessment method it uses to assess cost versus outcome

Elsie Choy, Health Infrastructure, New South Wales

Health infrastructure is important in influencing the outcomes, quality and efficiency of the healthcare system. Decisions about public funding of health infrastructure require consideration of relative costs and benefits of options. In New South Wales (NSW), considerable efforts have been placed on benefits assessment in the economic appraisal of capital projects. This involves qualitative assessment of the extent to which options improve patient access to health services and economic efficiency, and quantitative assessment of the value of health benefits to the greatest practicable extent.

This paper describes the NSW experience and approach to valuing health benefits in major capital projects. Since 2009, NSW Health has applied quantitative valuation (monetisation) of benefits for investment in single-purpose health facilities such as radiotherapy treatment facilities. This is done by comparing the number of additional patients receiving service and benefits, accounting for changes in patient disability burdens as a result of treatment and applying survival rate assumptions based on findings from research literature.

Assessing and quantifying benefits associated with investment in infrastructure involving a range of health facilities and services is much more difficult, given the complexity in identifying the cause and effects in health outcome improvements for a wide range of medical conditions. The method for single-purpose facilities was expanded to consider a range of clinical treatments in general hospital environments.

Method of valuation

The method is based on the causal relationship that there would be reduction



One of the NSW Government's key goals is to drive economic growth in regional as well as metropolitan areas. The Manilla Multi-Purpose Service Project delivers flexible, integrated health and aged care to the rural area

in pain and suffering and aversion of mortality for seriously ill patients who would otherwise not be treated without the hospital development because the existing hospital is at capacity.

Patients who access treatment at a public hospital are expected to experience a reduction in their disability (including pain and suffering) caused by the health condition for which they seek treatment. The degree of disability that a medical condition or disease inflicts on the sufferer is measured by its disability weight.

The assessment therefore involves estimation of average of time for which the disability burden of a patient is reduced as a result of treatment at a hospital. The reduction in pain and suffering is estimated by multiplying the number of such patients by the average reduction in disability for each patient, their years of remaining life and the Value of a Statistical Life Year (VSLY). The formula used for this calculation is:

Change in number of clinical separations x disability weight (pre-treatment) x reduction in burden of disability (years) x VSLY

The steps are:

- i. Identify a representative medical condition or disease from each of the hospital's Service Related Groups (SRGs) and the estimated average period of time for which the disability burden is reduced as a result of treatment at a hospital.
- ii. Apply disability weights for each condition/disease that has been published by the Australian Institute of Health and Welfare and estimate the reduction in disability burden as a result of treatment.
- iii. Estimate the average age at which the patient is treated at the hospital by examining the prevalence of each condition/disease in the Australian population.
- iv. Estimate the percentage distribution of prevalence of conditions by service group and by age.
- v. Using the formula from step (iv) and assuming the average life expectancy, estimate the mean age at which a patient is likely to present at the hospital for treatment, as well as the duration over which they will experience a reduction in their disability.

vi. Calculate the increase in the activity levels for each SRG by comparing the current levels and the projected activity in future years.

vii. Estimate the patient health gain by multiplying (v), (vi) and the VSLY.

The quantification exercise considers alternative scenarios regarding the magnitude of reduction in disability burden across all health conditions and diseases.

Assumptions

Change in number of clinical separations:

The change in the number of clinical separations is obtained by comparing the current and the projected level of activity in future years of each SRG provided in the public hospital.

The SRG is a classification system for grouping hospital inpatient records into categories corresponding to clinical divisions of hospital activity. The major purpose of the classification is to assist with the planning of health services.

This disease classification is then translated into an Australian medical coding system, ie Australian Refined Diagnosis Related Groups (AR-DRG) as outlined in the Australian Institute of Health And Welfare (AIHW) report, *The Burden of Disease and Injury in Australia 2003*.¹ Most classifications used in the AIHW study are consistent with the classifications used by World Health Organization ie International Classification of Disease (ICD) system.²

Disability weights: The disability weights are sourced from the AIHW, which collates information mainly from the Global Burden of Disease (GBD) study³ and the Netherlands study.⁴ for some diseases, there is no equivalent in either the GBD or Netherlands set of weights. In these instances, the weights are specifically derived from earlier Australian studies. The disability burden weights are measured as a number on a scale of 0-1, where 0 is assigned to a state comparable to perfect health and 1 is assigned to death.

Reduction in burden of disability: Currently, there is insufficient data from the medical literature to precisely determine the treatment-enabled reduction in disability burden across the wide spectrum of service groups. Consequently, the quantification exercise considers alternative scenarios of a 10%, 20% and 30% reduction in disability burden across all health conditions and diseases (with 20% being the central case).



The redeveloped Narrabri Hospital, an AUS\$40m project, finished in 2012. Since 2010/11, NSW Health has also commenced AUS\$850m-worth of regional hospital redevelopment and a number of regional cancer centres

The computation of the reduction in burden of disability (years) requires making a number of assumptions, which are described in Table I.

Value of Statistical Life Year (VSLY):

The value of statistical life (VSL) is sourced from an Australian Office of Best Practice Regulation's Guidance Note. The VSL is an estimate of the financial value society places on reducing the average number of deaths by one. The VSL is most appropriately measured by estimating how much society is willing to pay to reduce the risk of death. A number of empirical studies have derived estimates for the VSL. In reviewing

the studies relevant to Australia, Abelson (2007)⁶ argues that the most credible estimate is AUS\$3.5m for the VSL and AUS\$151,000 for the VSLY (in 2007 dollars). These estimates represent an average and are based on a healthy person living for another 40 years. The VSLY in 2011/12 dollars is assumed to be AUS\$168,000.

Application to capital investment in regional hospitals

The Australian and state jurisdictions are committed to making long-term improvements in the health systems for the community. Capital investment is needed to meet increased demand in health services

Table I: Reduction in burden of disability assumptions

Assumption	Description
Prevalence of diseases	The severity-weighted disability occurrence measured as a percentage of the population of that age and service group, sourced from AIHW.
Average life expectancy	The methodology assumes the average life expectancy to be 82 years (no gender differences). It is noted that the Australian Bureau of Statistics cites the average life expectancy for males as 79.3 years and 83.9 for females. ⁵
Age group	The age groups are: 0-14, 15-24, 25-64, 65-74, 75+
Mean age	The estimate of the mean age at which a patient is likely to present at the hospital for treatment, based on the prevalence by age data.
Reduction in disability burden due to treatment	Size of the reduction in disability burden for those patients (with less serious illnesses) after receiving treatment at the hospital in question – 10% to 20% as the central estimate (case by case assessment) with sensitivity analysis.

as a result of the ageing population and to address the rising burden of chronic disease. One of the investment priority areas is regional health infrastructure.

The Australian Government has committed to a total of AU\$1.8 billion funding to improve and develop regional health infrastructure. Funding allocation is decided through a process of application and assessment by an independent advisory board. The priority regional hospital funding programme will improve access to essential health services to as many Australians as possible living in rural, regional and remote areas through investments in health infrastructure. The objective is to provide

equitable access to, and affordable services for, patients in rural, regional and remote Australia, and the needs of Indigenous Australians and people experiencing socio-economic disadvantage. This will help close the gap in health outcomes between major metropolitan and regional areas of Australia.

NSW is the largest state in Australia with a population of 7.3 million. It is estimated that 4.6 million people (63%) live in the Sydney metropolitan area and 2.7 million people (37%) live in regional NSW in 2010. The population is projected to reach 7.9 million in 2021. One of the NSW Government's key goals is to drive economic growth in regional NSW. This is underpinned by

the need to balance population growth between regional and metropolitan areas so all people have access to good economic and lifestyle opportunities.

Since 2010/11, NSW Health has commenced a number of regional hospital redevelopment projects including Port Macquarie Hospital, Wagga Wagga Hospital, Dubbo Hospital Project, Tamworth Hospital and Bega Valley Hospital at a total capital cost of AUS\$850m, jointly funded by the NSW and Australian Governments. This is in addition to the AUS\$40m Narrabri Hospital redevelopment which was completed in 2012 and a number of regional cancer centres at a total capital cost of AUS\$149m at Coffs Harbour, Lismore, Port Macquarie, Gosford, Illawarra, Shoalhaven and Tamworth.

In the project planning and development phase, NSW Health applies cost benefit analysis, including the health benefit quantification method described here, to demonstrate the net benefits of each project. The analysis forms a key component of the economic appraisal of the project.

Table 2 shows the disability weights associated with the medical condition or disease from each of the hospital's SRGs, as well as the estimated average period of time for which the disability burden is reduced as a result of hospital treatment. A simplifying assumption is made that treatment results in a permanent reduction in disability. As treatment will only result in a temporary remission for some chronic health conditions or diseases, a modest average reduction in disability as a result of treatment at the regional hospital is assumed. For the purpose of the assessment method, a notional disability weight is nominated based on the range of disability weights for various diseases within each SRG.

Prevalence of diseases and health conditions

The estimated average period of time for which the disability burden of a patient is reduced as a result of treatment at the regional hospital is dependent on the average age at which the patient is treated at the hospital. This is estimated by examining the prevalence of each disease or condition in the Australian population, and assuming that a patient who is successfully treated will live on until the current average life expectancy in Australia.

Table 2: Reduction in disability burden as a result of treatment at hospital.

Source: AIHW (1999⁷ & 2003¹)

Service Related Group (SRG)	Notional disability weight (pre-treatment)	Period of reduced disability burden (years)
Cardiology	0.323	17.87
Interventional cardiology	0.395	17.87
Dermatology	0.070	38.21
Endocrinology	0.214	22.34
Gastroenterology	0.463	27.06
Haematology	0.090	36.74
Immunology & infections	0.613	36.81
Neurology	0.480	18.92
Renal medicine	0.104	32.58
Respiratory medicine	0.230	31.29
Rheumatology	0.370	24.57
Pain management	0.190	23.13
Colorectal surgery	0.224	27.06
Upper GIT surgery	0.420	36.81
Head & neck surgery	0.231	49.74
Dentistry	0.005	35.54
Ear nose & throat	0.110	52.56
Orthopaedics	0.201	33.02
Ophthalmology	0.170	18.92
Urology	0.157	32.58
Vascular surgery	0.600	17.87
Extensive burns	0.255	33.02
Gynaecology	0.180	32.58
Obstetrics	0.011	41.81
Qualified neonate	0.110	46.50
Drug & alcohol	0.330	40.13
Psychiatry – acute	0.584	40.13



Liverpool Hospital, Sydney. Projected patient demand is based on projections from each Local Health District

Table 4 shows the distribution across age groups of conditions by Service Related Group. This distribution is calculated from the prevalence numbers in Table 3. Using the information in Table 4 and assuming the average life expectancy to be 82 years, the mean age at which a patient is likely to present at the hospital for treatment, as well as the duration over which they will experience a reduction in disability, can be calculated as shown in Table 5.

Projected activity levels

The projected patient demand at each hospital by SRG is based on the Local Health District's clinical service planning data over a five year and ten year projection period. The activities are separated into day only and overnight.

In the economic appraisal, it is assumed that the base case (keep safe and operating) will only enable hospitals to meet the actual combined activity level or increase to the levels using existing capacity. It is then assumed that hospital redevelopment and expansion will enable them to meet activity projections to a 10-year planning horizon.

Magnitude of potential reduction in disability burden

There is currently insufficient data from the medical empirical literature to precisely determine the treatment-enabled reduction in disability burden such as years of life lost

**Table 3: Prevalence of conditions by age and Service Related Group ('000).
Source: AIHW (2003)¹**

Service Related Group	Prevalence ('000)					
	All	0-14	15-24	25-64	65-74	75+
Infectious and parasitic diseases	21.4	1.5	1.1	15.3	1.9	1.5
Acute respiratory infections	12.1	4.6	1.7	4.7	0.6	0.6
Maternal conditions	2.1	0.0	0.3	1.8	0.0	0.0
Neonatal causes	38.5	8.6	5.5	20.4	2.3	1.6
Nutritional deficiencies	5.6	0.8	0.7	3.3	0.4	0.4
Malignant neoplasms	89.1	0.8	0.8	40.0	23.1	24.3
Other neoplasms	3.3	0.1	0.0	2.1	0.4	0.6
Diabetes mellitus	93.5	0.4	0.9	43.9	20.8	27.5
Endocrine and metabolic diseases	16.4	3.0	1.6	6.4	2.0	3.5
Mental disorders	394.5	18.5	47.8	297.5	21.9	8.9
Nervous system and sense organ disorders	263.9	8.6	8.3	74.7	47.3	125.0
Cardiovascular disease	119.8	0.9	1.5	38.8	27.7	50.9
Chronic respiratory disease	150.4	15.6	12.0	62.8	25.1	35.0
Diseases of the digestive system	37.3	0.8	1.0	20.8	6.5	8.3
Genitourinary diseases	43.8	0.3	4.2	28.3	4.7	6.3
Skin diseases	18.5	1.8	3.8	8.1	2.0	2.9
Musculoskeletal diseases	94.8	0.9	2.0	48.4	19.0	24.6
Congenital abnormalities	38.5	11.8	5.1	18.1	2.0	1.5
Oral health	23.3	2.1	2.0	13.3	2.8	3.1
Unintentional injuries	77.8	3.0	5.4	49.5	8.9	11.0
Intentional injuries	5.8	0.0	0.3	4.4	0.6	0.4
Ill-defined conditions	8.9	0.0	0.3	8.2	0.3	0.1

Table 4: Prevalence of conditions by Service Related Group Distribution across age groups. Source: AIHW (2003)¹

Service Related Group	Prevalence (proportion)				
	0-14	15-24	25-64	65-74	75+
Infectious and parasitic diseases	7.2%	5.0%	71.8%	8.8%	7.2%
Acute respiratory infections	38.3%	13.7%	38.8%	4.6%	4.6%
Maternal conditions	-	12.9%	84.6%	-	-
Neonatal causes	22.3%	14.4%	53.0%	6.0%	4.3%
Nutritional deficiencies	14.1%	13.0%	58.5%	7.5%	6.9%
Malignant neoplasms	0.9%	0.9%	44.9%	25.9%	27.3%
Other neoplasms	2.3%	1.4%	65.8%	12.6%	17.9%
Diabetes mellitus	0.4%	0.9%	47.0%	22.3%	29.4%
Endocrine and metabolic diseases	18.4%	9.9%	38.8%	11.9%	21.0%
Mental disorders	4.7%	12.1%	75.4%	5.5%	2.3%
Nervous system and sense organ disorders	3.3%	3.1%	28.3%	17.9%	47.4%
Cardiovascular disease	0.8%	1.2%	32.4%	23.2%	42.5%
Chronic respiratory disease	10.4%	7.9%	41.7%	16.7%	23.3%
Diseases of the digestive system	2.0%	2.8%	55.7%	17.4%	22.1%
Genitourinary diseases	0.6%	9.7%	64.6%	10.8%	14.3%
Skin diseases	9.6%	20.4%	43.5%	10.9%	15.6%
Musculoskeletal diseases	0.9%	2.1%	51.1%	20.0%	25.9%
Congenital abnormalities	30.7%	13.3%	46.9%	5.2%	3.9%
Oral health	8.9%	8.6%	57.4%	11.8%	13.2%
Unintentional injuries	3.9%	6.9%	63.6%	11.4%	14.1%
Intentional injuries	0.8%	6.0%	76.1%	10.9%	6.2%
Ill-defined conditions	-	3.3%	92.5%	3.7%	-

(YLL) and years lost due to disability (YLD) averted across the wide spectrum of health conditions and diseases shown in Tables 3, 4 and 5. Instead, the assumptions shown in Table 6 are used in estimating the health benefits to patients.

Estimated health benefits

Based on the above parameters and assumptions, the health benefits of each regional expansion and redevelopment are estimated for each year over an analysis period of 20 years. The present value using a range of alternative real discount rates (4%, 7% and 10%) is then calculated.

Results and sensitivity testing

The economic appraisal of regional health capital projects has yielded a benefit cost ratio (BCR) within the range of 1.2 and 2 under a real discount rate of 7%. In each

instance, sensitivity analysis is undertaken to test the robustness of the BCR to changes in key parameters and assumptions. As the project benefits encompass other benefits beyond patient health, the result of the quantification exercise is a conservative estimate of the project's total benefits.

Limitations

It is acknowledged that there are constraints/limitations in the above approach, as health benefit valuations may differ between individuals due to differences in age, education, risk aversion or time preference.

The mapping of the disability weights to the SRG is notionally based on the range of disability weights for various diseases within each SRG. Collection and analysis of detailed activity data will help inform the judgement in formulating the appropriate disability weight for each SRG.

Assuming a uniform 20% reduction in disability burden due to treatment means the method can put a value to treatment activity. The challenge is to base the reduction more on evidence rather than on uniform assumptions. In taking this method forward, an area for further improvement is to base the assessment of reduction in burden of disability on the health impact of the specific treatments and models of care under each project option considered.

Conclusions

Subjecting capital proposals to benefit cost assessment supports sound decision-making on strategic investments in the health system underpinning improvements in efficiency, access and outcomes of healthcare. Capital investment in health infrastructure will impact on the operation of health facilities and contribute to improvements in healthcare delivery. The health impacts (benefits) usually include patients' quality and quantity of life. These benefits need to be evaluated against the capital and operating costs associated with the project in question. The health benefit quantification or monetisation is a key step in providing a picture of each project's economic, environmental and social merits.

In NSW, the approach and method outlined in this paper has been used to improve the rigour and quality of economic appraisals of health infrastructure projects. In the projects where quantification of health benefits is feasible, it has been demonstrated that the health benefits associated with the capital investments exceed the resource costs.

Valuing health benefits is less complex for specific-purpose health infrastructure such as emergency department upgrades or cancer centres. There is an opportunity for further study of the link between a capital investment and its resulting health, social, community and other benefits. For example, it would be helpful to better understand how the design of health facilities contributes to improvements in health services delivery and patient health outcomes.

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Table 5: Mean age of patients and average length of disease by Service Related Group. Source: Calculations from AIHW (2003)¹

Service Related Group	Mean age (years)	Length of disease (years)
Infectious and parasitic diseases	45.2	36.8
Acute respiratory infections	29.4	52.6
Maternal conditions	40.2	41.8
Neonatal causes	35.5	46.5
Nutritional deficiencies	40.2	41.8
Malignant neoplasms	59.7	22.3
Other neoplasms	52.5	29.4
Diabetes mellitus	59.7	22.3
Endocrine and metabolic diseases	45.3	36.7
Mental disorders	41.9	40.1
Nervous system and sense organ disorders	63.1	18.9
Cardiovascular disease	64.1	17.9
Chronic respiratory disease	50.7	31.3
Diseases of the digestive system	54.9	27.1
Genitourinary diseases	49.4	32.6
Skin diseases	43.8	38.2
Musculoskeletal diseases	57.4	24.6
Congenital abnormalities	32.3	49.7
Oral health	46.5	35.5
Unintentional injuries	49.0	33.0
Intentional injuries	47.5	34.5
III-defined conditions	44.3	37.7

Table 6: Health benefit estimation assumptions

Proportion of day-only to overnight benefits	Adjustment factor to account for the fact that patients with overnight stays tend to have more serious conditions than those admitted to the hospital for the day only – 50% (that is, the benefits of treatment for overnight patients are twice that of day-only patients)
Proportion who would have received treatment in other hospitals without the redevelopment	Proportion of patients who cannot be treated at the hospital in question under the base case who will find treatment at some other hospital in the network – the assumed value is subject to case by case assessment.
Proportion of patients averting mortality as a result of being treated at the hospital	Proportion of patients treated at the hospital in question who have very serious illnesses is assumed to be 2%
Reduction in disability burden due to treatment	Size of the reduction in disability burden for the rest of the patients (with less serious illnesses) after receiving treatment at the hospital in question – 10% to 20% (case by case assessment, supplemented by sensitivity analysis)

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Mixed-use environments:

Retrofitting the shopping mall to support healthier communities

How can the US turn car-centric, run-down retail spaces into health-promoting environments? This study proposes turning them into mixed-use 'villages' that strengthen communities and are more friendly to walking and public transport

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During the post-war era of low gasoline prices and prosperity, suburbs and subdivisions have been constructed in formerly rural areas, usually far from workplaces and shopping facilities, accessible only by automobile. Public transportation has usually been insufficient, inefficient or lacking. The need for a personal motor vehicle to drive to work, shop and visit family and friends has been taken for granted. Although the use of automobiles and the larger houses and lots available in the suburbs have provided freedom of movement, they have also led to the loss of forest and farmland, the loss of small-town life and the creation of urban sprawl, lacking defined communities or neighbourhoods, where people increasingly live in comparative social isolation.¹ The long-term effects of these changes on human health, wildlife, habitat and other aspects of the environment are not yet fully understood. Living mainly indoors and out of sight of neighbours because of modern appliances such as air conditioners, clothes dryers, televisions and computers, people are connecting more today by text message, email and social media than face-to-face.²

In recent years, political, social and economic trends have combined to challenge the habits of suburbanites and the places they frequent, such as shops and shopping malls, as well as the exclusive use of automobiles for transportation. Foreign wars and financial crises have led to economic decline and trillion-dollar deficits. Gasoline reserves are in question and overall buying power has declined.

There has been much discussion of the isolating nature of urban and suburban life as well as the disruptions in social relationships and their adverse health effects.³⁻⁵ At one end of the socio-economic spectrum, the razing of old neighbourhoods for "urban renewal" led to massive social displacement and the loss of supportive social networks.⁶ Among suburbanites, family connections and friendships are fewer and weaker; families are smaller and both family and friends are increasingly scattered across the country. Membership of civic organisations is also in decline. In his book *Bowling Alone*, Robert Putnam¹ uses the pastime of bowling to exemplify this decline, noting that although the number of people who bowl has increased in recent years, the number of people bowling in leagues has decreased. He suggests that declining membership of such social organisations threatens democracy

because, by "bowling alone", people do not participate in the civic discussions that tend to occur in a league environment. The overall decline in personal interaction – the traditional basis of social life, enrichment and education – has reduced the active civil engagement required for a strong democracy. Disengagement from political involvement is seen in declining voter turnout, attendance at public meetings, serving on committees, and working with political parties.

Americans are said to be increasingly distrustful, not just of government⁷ but of one another; witnessed by the many walled and gated communities that have arisen to meet a rising tide of paranoia and fear of crime. Tenuous contacts with one's neighbours not only contribute to distrust but mean that such people cannot be relied upon for assistance in times of crisis. According to Putnam,¹ the social capital



Mark moss/Fotolia.com

Figure 1: Overbuilding, recession and the internet mean that many US malls are no longer financially viable

(ie, goodwill and tangible help from the community) that was once available has declined in the US since the early 1960s. Participation in national organisations and in social activities such as picnics, dinner parties and card games has also declined.

Social bonds and connections in America have weakened over the past half century and social networks have become smaller due to reduced social interaction.⁸ Support for this observation comes from the General Social Survey (GSS) on changes in social networks between 1985 and 2004.⁹ In 1985 the GSS collected the first nationally representative data on "confidants with whom Americans discuss important matters". In the 2004 GSS, changes in core social networks were reassessed. The major findings were as follows:

- Discussion networks were smaller in 2004 than in 1985
- The number of people saying they had "no one to discuss important matters with" nearly tripled
- Average network size decreased by about a third, from 2.94 in 1985 to 2.08 in 2004 (a loss of one confidant in three)
- The typical respondent reported having no confidant, whereas in 1985 the typical respondent had three confidants
- Both kin and non-kin confidants were lost in the past two decades, with a greater loss of non-kin ties. This has led to networks centred on spouses and parents, with fewer social contacts through voluntary associations and neighbourhoods.

The shrinkage of social networks reflects an important social change in the US, where the greatest decrease in close bonds occurred between neighbours and voluntary group members. McPherson et al⁹ conclude that community and neighbourhood ties have weakened dramatically. Virtual social media's impact has been to create a larger network of weak social relationships rather than to strengthen bonds between close friends and family. Spending time on the internet has moreover been found to reduce interactions with family members; for every minute spent using the internet, a third of a minute less was spent with family.¹⁰ In a study of internet users over a one- to two-year period, time spent using the internet was inversely related to family communication and to the size of participants' local and distant social networks.¹¹



Figure 2: Broadway Malyan's Forum Coimbre, an award-winning suburban shopping centre in Portugal; the best contemporary malls connect with nature, and with the wider community

Declining social networks and personal interaction are not only a threat to democracy, according to Putnam,¹ but a threat to health and social wellbeing. Man is a social animal with needs for physical contact and nurturance that have profound implications for health and disease. Multiple studies have shown that the existence of close personal relationships and frequent social interaction are essential to good health, and those lacking strong social ties are at increased risks of illness and death from all causes.¹²⁻¹⁵

The positive effects of close community

ties on health and longevity were revealed in a now-classic 30-year study of members of the town of Roseto, Pennsylvania, made up largely of Italian immigrants.¹⁶ In the early 1960s, the town was noted for having an exceptionally low death rate from ischemic heart disease (myocardial infarction), less than half that in an adjacent town, Bangor, which lacked strong community ties. Yet smoking and unhealthy dietary habits were as common in Roseto as in neighbouring communities. In the early 1960s, Roseto was a close-knit community where families often ate together, enjoyed frequent social

gatherings and entertaining, and had many strong civic organisations. In later years, as Rosetans adapted to the American way of life and began to seek better paying jobs and moved to the suburbs, their death rate from MI rose to equal that of Bangor.

Rosetans who had been tested in 1962-63 and experienced a fatal MI by the year 1990, or had a well-documented heart attack and survived, were compared to unaffected controls. As expected, high cholesterol levels were associated with a two-fold increased risk of MI. Yet fewer than 20% of those with high cholesterol levels experienced an MI over the 30-year period. There were also no significant differences between the coronary patients (survivors or otherwise) and matched controls in terms of the standard risk factors of smoking, hypertension, diabetes or obesity. These findings were interpreted as suggesting that, despite having these risk factors, Rosetans tended not to succumb to MI because of the protective effect of strong social bonds and networks against heart disease.¹⁷

Even more impressive are studies indicating that coronary heart disease can be reversed by participation in programmes that include frequent and intense social interaction. In his interventional studies of high-risk patients with heart disease, Dean Ornish included dietary restriction, smoking cessation and meditation as well as frequent group meetings in which participants were encouraged to interact openly and warmly with one other. Ornish et al^{18,19} reported that the extent to which participants "opened up their hearts" to other people in these groups over the one- to two-year programme was paralleled by the increase in the patency of their coronary blood vessels, as shown by percutaneous coronary angiography.

Taken together, these observations suggest that the suburban way of life and associated decline in social relations have adverse effects on health and longevity. At the same time, there has been a drastic change in the general economy: consumer spending is expected to decline to what it was about 10 years ago, and a new pattern of frugality will remain.^{20,21} Retail material goods sales will likely suffer most and not rebound from recessionary spending levels. Consumers are also less oriented towards spending and more inclined towards family, community and the support of local businesses.²²

Overbuilding, global recession, increasing

internet sales, the decline of department stores and changing consumer values have combined to create what has been described as the "perfect storm" for shopping centres and malls. Retail and restaurant sales have declined and store vacancies are accelerating. Many shopping centres and malls are in serious financial trouble and are searching for strategies to become viable again. According to White Hutchinson, "root causes rather than just symptoms need to be determined and then addressed in order to cure the ills. Fixes are never simple or easy. An overall strategy, often requiring repositioning and some redevelopment of the shopping centre, must be formulated. Such an analysis and strategy is often best accomplished by an outsider, lacking pre-existing biases."²³

From shopping centre to village

We co-authors – an epidemiologist, a social scientist and a professor of architecture affiliated with a Community Design Center – propose herein a practical solution that could be applied to any ailing shopping mall and could lead to increased consumer activity, profitability and sustainability. Our central idea is that malls can be kept vital by retrofitting them to serve additional essential purposes; that is, by transforming them into village-like communities. This could entail building several levels of apartments and offices above the shops below (if structurally feasible) or designing adjacent new residential structures.

To create a village it will be necessary to provide all of the amenities of a village or small town, ie, a butcher, baker, grocer, post office, auto repair shop, hair salons, cafes, restaurants, newsagents, etc, as well as an administrative structure, community centre and meeting room. The size of major stores that depended on a high volume of traffic may have to be reduced, but smaller shops could be added, allowing "mom and pop" stores to reappear. It may also mean more business for stores that have not done well commercially in traditional shopping malls, such as custom framing and art shops.

While the custom of "going out to the mall" may be declining in the US for the many reasons described above, people may be more likely to take advantage of the facilities offered by shopping malls if they lived there, as part of a village-like community where they would meet and interact regularly

with others and where store owners would become neighbours. This concept could resolve the simultaneous problems that beset the current suburban lifestyle: firstly, having to drive great distances in some cases, often in different directions, to access workplaces, schools, shops, churches and friends; and secondly, the lack of availability of close friends and family and of face-to-face interaction. Retrofitting and transforming ailing shopping malls into villages would at once bring new life and business to these facilities as well as bring people into closer proximity to their everyday needs; it would create opportunities for employment, enhance social networks and relationships, and at the same time reduce the need for and use of motor vehicles. The proposed retrofitting utilises existing infrastructure, entails less need for vehicular use, and would serve to increase social interaction and the quality of social relationships.

The vision is to transform ailing shopping malls into self-sustaining residential, shopping and office spaces that would be identified as villages, where people of all types and ages can live comfortably and access all essential and desired amenities on foot or bicycle. In addition to physical retrofitting, support and guidance would also be provided to the new residents and tenants to establish a village social administrative structure.

Implementing the proposed retrofitting programme would comprise the following:

- Building two to three storeys above shopping malls or designing new structures in adjacent former parking lots to provide mixed-use residential/office space
- Arranging for parking close to residences and offices
- Organising a village administrative structure, driven by community members
- Organising weekly markets inside or adjacent to malls, eg farmers' markets and/or flea markets and activities such as fairs, exhibitions, musical or other events
- Creating (or modifying) essential facilities and shops in addition to those already provided in the shopping mall, including but not limited to a post office, butcher/fishmonger, bakery, hair salon, fitness facilities, medical/dental clinics, a community centre, cinema and tavern.

Retrofitting shopping malls into village-like places would be expected to ensure a high level of social interaction and contentment



Anguskirk/Foter.com

Figure 3: The walkable, sociable, multi-use nature of the traditional English village was the part-inspiration for this research

as well as commerce. Visitors would be attracted by the excitement and intimacy of the new "villages", with all their added advantages and amenities. Many readers will recall the American TV programme *Cheers*, and its portrayal of a tavern with a close-knit clientele where "everybody knows your name". Shopping malls could similarly be altered to become villages where people would quickly grow acquainted with one another; where shopping can be done on foot; where people can also be employed in many cases; and where all of the amenities of a "true" village are provided, including a village administrative structure.

Determining feasibility

What would be needed to determine the feasibility of such a venture at a given site? We envision a two-phase process: 1) background research, and 2) specific applications.

Phase I: Background research

- Case Studies: To prepare for work of this complexity and to ground it in terms of financial viability, up to five successful

"live and work" revitalisations of existing shopping centres in mid-size American cities would be sought and described, comparable to that of the mall in question (the "target mall").

- Sociological Analysis: To determine the social-psychological impact of the proposed architectural and social transformation at each site, and historical survey and socio-cultural analysis would be carried out as well as an opinion survey of shoppers at the site, to assess the level of community readiness and interest in participating as potential residents or tenants.
- Materials and Structural Research: Construction materials and methods utilised in many American shopping centres are structurally insufficient to support vertical expansion. Traditional methods for adding structural capacity are also costly and commercially invasive in terms of downtime to existing occupants. To overcome this, existing methods and models would be analysed and alternative solutions proposed. This research would

allow for rapid structural feasibility assessment of selected existing structures.

- Code/Zoning Analysis: Existing codes and zoning regulations enforced in many municipalities limit building density and foster segregation of activities. Zoning ordinances and building codes at each site would be reviewed and compared with best practices being enacted in communities around the country.

Phase II: Specific applications

- Case Studies/Demographic Comparisons: Results of the Phase I review would be compared to the specific demographic and other features of the target mall and to the immediate context and surrounding neighbourhoods. This information would help determine the economic viability and percentage of space to be allocated to various uses at each site.
- Materials/Structural Research: Existing structural conditions would be reviewed in relation to the results of research from the Phase I materials/structural analysis, to provide a guide for proposals relating



Figures 4&5: Built on the site of an abandoned 1960s mall, Belmar, in Lakewood, Colorado, offers residential, retail and leisure space on one 115,000sqm site

to the targeted mall. This would provide an estimate of the maximum extent of vertical expansion. These research findings would be turned over to the selected licensed design professionals for the implementation phase.

- **Code/Zoning Analysis:** Local demographics and proposed building usage would be compared to existing codes and ordinances enforced at the site of the target mall. Drawing on best practices revealed in the Phase I analysis, recommendations would be offered and assistance provided to the owner/manager in preparing documents needed to apply for zoning modifications.
- **Architectural Programming:** Information gleaned from the three immediately preceding steps would be combined with a survey of existing conditions (parking, total footprint, net-to-gross ratio, size and location of existing mechanical infrastructure). An overall report on proposed uses, square footages, key proximities and other relevant issues then would be prepared for implementation by licensed design professionals.
- **Concept Design:** Although the final design would be the responsibility of the sponsor's architect, conceptual sketches and renderings would be developed to establish the project's image and to assist in marketing efforts.
- **Preliminary Cost Estimate:** Based on

the programme and conceptual design, a preliminary cost estimate would be prepared to facilitate initial discussions with the sponsor and/or investors and to establish phasing priorities should the total scope of work prove too large for implementation in a single phase.

- **Report Preparation:** These activities would include discussing and synthesising the data, creating appropriate graphics and tables, and offering evidence-based recommendations.

Discussion

An entire way of life is changing in America, and with it, traditional concepts and methods of shopping and the use of certain shopping facilities. Shopping for necessities will continue, of course, but the habit of driving to malls to shop is increasingly under pressure to change. With ready access to multiple suppliers and catalogues and instant access to prices, discounts and easy methods of payment, shopping is increasingly done online for more expensive items, saving petrol and saving time. As noted, several emerging trends now challenge the continued viability of shopping centres and malls. At the same time, there is increasing awareness of attenuated connections to family, friends and community, and many feel the need for a more permanent "home".²⁴ With the seemingly endless recession, rising fuel prices and declining buying power,

excitement at the prospect of shopping at the mall has dimmed. A new perspective on life is emerging: people are "making do" and focusing more on others for activities and entertainment, while confronting the reality of having fewer close friends and family to visit than they would wish. This may act as a stimulus for seeking a small town or village way of life, possibly one that, for older people, was experienced in childhood.

The strategy proposed here for addressing these diverse trends, while salvaging the existing infrastructure, is to retrofit ailing and abandoned malls into village-like places such as Roseto, Pennsylvania, where, a generation ago, a thriving community, with strong social networks and low cardiovascular disease mortality rates, was lost. This occurred when the residents, mainly Italian immigrants, followed the American dream of suburban living, prosperity and self-determination that led to their gradual dispersal and resultant social isolation.

The conversion of shopping malls into villages would combine residential living with business and shopping facilities and provide all of the amenities and services that are typically available in a village; it would also offer residents multiple opportunities to establish social networks and to recreate a more communal lifestyle. Communities would develop in which people comfortably live, shop for basic necessities, enjoy other amenities and, in many cases, work on site,

while continuing to enjoy the mall's features.

The growth of shopping malls paralleled the rise of suburbia in the 1950s through to the 1970s. Planners then had little regard for fuel economy, the environment or for fostering walkable spaces. This exuberant period of growth in America did not last, however; and many shopping malls around the country are failing or abandoned.³ Of the 2,000 regional shopping malls nationwide in 2001, 19% were considered in danger by the Congress for the New Urbanism and PricewaterhouseCoopers. In many cases, poor economic performance was compounded by site or location characteristics that made a turnaround unlikely as long as a conventional retail mall format was retained. This has created areas known as "greyfields", largely abandoned or underused spaces that nevertheless offer opportunities for mixed-use areas that combine work, home and other facets.

Such models clearly require major changes in thought and practice with regard to zoning, developer/community leader commitment, and other factors. The vision and support of lenders, developers, and community leaders will be critical in facilitating the conversion of failing or abandoned shopping malls into mixed-use locales. However, when all of the necessary elements come together, the vision can be realised. For instance, Belmar community in Lakewood, Colorado, on the site of a 115,000sqm (1.4m sq ft) abandoned shopping mall built in the 1960s,

has become a mixed-use development with shops, homes, and offices in close proximity to one another.²⁵

In her book *Retrofitting Suburbia*, Ellen Dunham-Jones²⁶ discusses the retrofitting of failing shopping malls as part of a broader agenda to retrofit suburban areas as a whole (see also Dennis-Jacob²⁷), making them more desirable places in terms of aesthetics and convenience but also in terms of the overall health of the population. She addresses shopping malls as a modern, indoor version of the traditional marketplace and notes their growing struggle to survive in an increasingly competitive retail environment. She suggests that shopping malls, as "core" areas of many suburbs, present opportunities for retrofitting as mixed-use environments that can also contribute to making suburbs more sustainable while maintaining the malls' commercial functions. Noting that the retrofitting of malls is an increasing practice in North America, Dunham-Jones proposes that parking areas surrounding malls could be converted into high-density buildings, including residential units, and that improved conditions for walking and biking should be provided as well as increased public transportation, thereby creating a livable and sustainable part of the suburban environment.

Here we have sought to contribute to this perspective by suggesting that failing shopping malls could be usefully retrofitted not just as mixed-use places but specifically

as "villages" within the larger suburban environment, acquiring their own identity in relation to surrounding areas. We have also outlined a method for assessing the architectural, regulatory, economic and social feasibility of implementing such plans. Subject to establishing the feasibility and acceptability of such concepts at a given site, a masterplan would be developed for implementation and evaluation. Retrofitting shopping malls into villages could save these commercial structures and in some cases the retail facilities themselves, as well as reduce encroachment on greenfield areas, and help to strengthen the community and spiritual life of the country.

Authors

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The future of healthy communities: **Humanism in our designed environments**

A salutogenic approach to landscape design can help bridge the gap between creating sustainable environments, and making community resources that improve individual health and wellbeing

*David Kamp FASLA, LF, NA, Dirtworks
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Our capacity and potential as a collective society and the technological, scientific and educational resources we have at our disposal are unprecedented. Yet so are the threats to the basic health of the planet and its inhabitants. Biodiversity declines while greenhouse gas emissions increase; the balance between resource depletion and regeneration grows more precarious as the earth's climate grows more erratic. Population soars in developing countries, concentrated in unprepared mega-urban centres. Vast portions of the world's fastest growing cities are built on ecologically sensitive, unstable landscapes; dense quarters in poverty and environmental degradation that lack the support systems

to provide a basic quality of life for its inhabitants.

This is, indeed, the best of times and the worst of times. Although we have advanced technology at our disposal, it will do no long-term benefit unless we also take into account ideas of a healthy environment that tie individual wellbeing to larger community goals. The following two concepts, I believe, will help make a bridge between individual and larger concepts of health: first, sustainability – creating and maintaining the conditions for life to thrive in balance with its environment; and second, salutogenesis – the promotion of health and the role of individual perception and motivation in making choices towards health.

Sustainable development¹ is based upon a sense of connectedness – the relationship between societies, the environment and its resources. The term was coined in 1987

by the Brundtland Commission (formerly the World Commission on Environment and Development), which framed it as development that "meets the needs of the present without compromising the ability of future generations to meet their own needs". This mandate, to balance resource use and environmental preservation, has expanded to encompass a larger responsibility: to not only accommodate but *improve* the life of future generations by restoring and repairing natural systems and preventing future ecosystem damage. It is concerned with the carrying capacity of natural systems and the stress placed on the environment by the social challenges of humanity.

Salutogenesis,² on the other hand, is a perspective of personal health proposed by Aaron Antonovsky. Rejecting the long-standing medical model of dichotomy,



Figure 1: Rockefeller Center Chanel Gardens, New York. Sustainability and salutogenesis are two concepts that can provide a link between a healthy environment and wider community goals

which separates health and illness, Antonovsky proposed that these extremes be understood as a continuum. In addition, salutogenesis describes an approach that looks at the factors that promote health rather than factors that cause disease, focusing on the relationship between health and stress.³ At its core is his Sense of Coherence construct, which describes the role of stress in human functioning, and the need to maintain an orientation towards the world that is comprehensible, manageable and meaningful. In essence, a fortified sense of coherence – comprehending a situation, managing effective actions, and finding meaning or purpose – better prepares us for life's challenges. Antonovsky's construct emphasises the importance of a personal definition of life's quality and how that quality influences behaviour and choices.

The future of humanism in our designed environments

It is not too much of a stretch to claim that all design aims to be salutogenic. If not explicit, then by implication, design is the art (and sometimes science) of rendering the elements of the designed environment comprehensible, manageable, and meaningful. Our quality of life is directly influenced by the quality of the designed relationship between the built and natural environments. Design is an expression of personal and social values. It is an expression of our hopes and aspirations in what we choose to build. Unfortunately, trouble in designing today's environment begins with the complex and often conflicting goals various essential and peripheral agencies impose on the process and demand from the results.

It has become a struggle for designers (architects, landscape architects, planners) to understand and balance the myriad physical systems that need to be accommodated with the political forces that influence a societies' ability to manage natural, technical, economic and human resources. No wonder finding personal meaning in urban settings can be daunting. But if Antonovsky's sense of coherence is to be strong in individuals living in these complex circumstances, it is essential for designers to try and lay bare the threads that tie individual experiences to larger social and environmental needs. Trusting that this theory has merit, the future of personal health may well depend



Figure 2: Responsive Infrastructure – rediscovering a connection between natural systems and engineered systems

upon it: each of us must not be hampered by the environment in finding meaning in our lives or else we will not care enough to find the strength to persevere. In essence, designers, like doctors, should develop an environmental version of the Hippocratic oath; not the encapsulated "first do no harm" mantra, but the oath with all its awareness that professionals have an expertise and therefore a responsibility to inform, educate, and, if required, warn against possible problems.

Nowhere is that challenge more evident than in our urban environments. More than half the world's population lives in cities. This percentage is predicted to increase to more than 75% by the middle of the century. Cities once had an organic relationship to the resources that made them work. Today, we find immense concentrations of people in places that cannot support them. There is no longer that organic connection to population growth and resources, to the infrastructure that supports our cities and the carrying capacity of the land's natural resources. Even in large developed centres, much is antiquated, inefficient and not sustainable going forward.

In addition, there are landscapes not directly linked to urban centres that have been laid waste through overproduction and stripping that should be reclaimed and made vital. In the following examples, and throughout the world, we need to apply both sustainable and salutogenic ideas to

our designed interventions as we come to appreciate the interconnectedness of all the landscapes we inhabit.

Global planning is well beyond the scope of this investigation. However, the two case studies discussed here make creative use of designed infrastructure integrated with natural systems. Both deal with resources: in one, resources that have been forgotten; and in the other, resources that have been exhausted. Each offers insightful ideas for a sustainable future, one in which individuals are engaged and participating in health. More importantly, each design strategy merits review because the solutions point to larger, more encompassing design issues.

Responsive Infrastructure: a case study

Built within one of world's largest natural estuaries, New York City evolved into a great commercial centre. Over the course of centuries, this vast ecosystem and its intrinsic natural capital was exploited in efforts to provide the expedient engineered infrastructure necessary for a rapidly growing population. As the city grew in size, its connection to the land and water was compartmentalised in ways best suited to commercial interests and economic pressures. Natural watercourses were obliterated or piped, and landform moulded and paved to accommodate expanding populations. The shoreline was filled and the waterfront buried under bulkheads

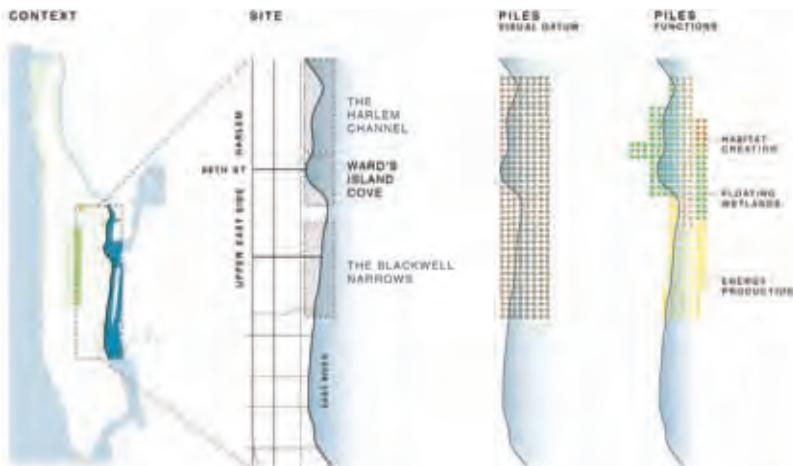


Figure 3: Remnant pilings of abandoned piers lining Manhattan's East and Harlem Rivers form an inspiration for creating a new waterfront. The design respects the ecological, physical and social forces that have shaped the city

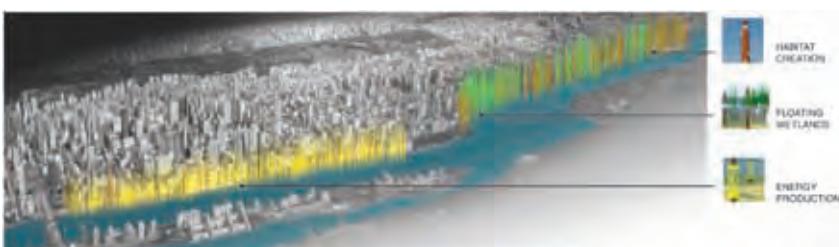


Figure 4: Using three areas along the waterfront, the piling system forms an adaptive network for a host of site-specific uses



Figure 5: Within a protective cove, pilings create a dynamic neighbourhood centre with recreational access, floating community gardens and links to public transportation

for maximum commercial and industrial efficiency. Economic forces changed, and over time so did the dynamic of the city. A waterfront once pulsing with vibrancy from shipping and industry eventually morphed into only convenient motorways, restricting waterfront access altogether. Mixing recreational and commercial uses – or even recreational and industrial uses – can be a vital part of city life. That vitality disappears, however, when any natural and therefore emotionally satisfying resource is removed from personal experience. So as the city evolved from a vegetated waterfront, to an industrial engine, and now to a post-industrial urban centre, the waterfront's natural and then built infrastructure systems became defunct; mere echoes of past identities and values.

This first case study explores a response to ageing urban infrastructure and a forgotten connection to nature. Titled Responsive Infrastructure, the design seeks to rediscover a connection between natural systems and engineered systems; New York City's industrial and commercial past has been rethought for a sustainable future, honouring the past as one looks forward.

The design uses the remnant pilings of abandoned piers that stretch along the East and Harlem Rivers as an inspiration for creating a new waterfront that respects two historic forces that once shaped this city: the natural ecosystem, influenced by river currents and tidal forces; and the social ecosystem, influenced by human habitation. Looking like a border of hybridised rivets along the Manhattan waterfront, Responsive Infrastructure repurposes the pilings, fusing together social, ecological and physical environments. Together, the infrastructure forms an adaptive network for a host of new site-specific uses.

Respecting ecological, physical and social forces

Three areas were identified for achieving these goals, based upon environmental conditions, cultural connections and usage:

- An area for energy production. Blackwell Narrows forms a section of river with fast-flowing, turbulent currents. The adjacent neighbourhood is densely developed with housing and commercial buildings and sits on a high bluff overlooking the river. With no direct access possible to the river, pilings are used to support a

turbine farm, capturing the strong river and tidal currents for energy. Beacons atop each piling reveal the currents' direction and intensity of flow, permitting public awareness of the river's changing conditions. Energy created from the turbines is used to light an adjacent elevated walkway and bikeway, providing a riverfront promenade to an otherwise inaccessible area.

- An area to celebrate connections and community. Mill Rock Cove takes advantage of a slow-moving river current, a naturally formed protective cove with a gentle surrounding terrain, the terminus of a major city thoroughfare and nearby public transportation to create a waterfront community centre. Forming a portal between land and water, the cove is a dynamic intersection of active and passive functions. The pilings provide the public with protected recreational access to the water within a series of floating wetlands. The concept for the floating wetlands – a buoyant foam and mat structure containing growth media and plants – also serves as the framework for floating community gardens, providing fresh vegetables to the neighbourhood. The pilings also provide pier access to a water/land transportation link, a new part of the city's public transportation system. The link encourages walking and provides commuters with "everyday" access to nature.

- An area for ecological restoration and environmental study. The river's Harlem Channel section, a confluence of tidal and river currents, creates a distinct ecological environment with the ebb and flow of tides mixing salt and fresh water ecosystems. The adjacent landform allows for the recreation of the area's natural watershed, creating a unique setting that combines a natural storm water treatment structure within the city structure. This intervention of a natural stormwater system within the dense urban fabric helps accommodate periodic storm surges and erratic rainfall occurrences. The pilings are used to create natural habitat and establish a local water quality treatment facility – serving both as an outdoor environmental laboratory for adjacent education institutions and an informal educational opportunity for the surrounding neighbourhoods.



Figure 6: Forming a portal between land and water, the cove celebrates connections and community

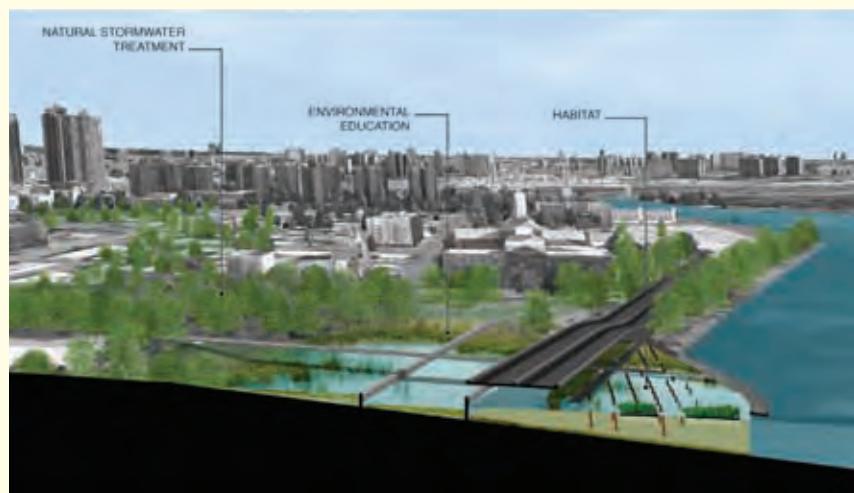


Figure 7: Creating habitat, a natural storm-water treatment facility, and an outdoor environmental education laboratory

The piling system crafts a new vision for the iconic waterfront piling, adapting it for new uses that respond to today's challenges. It is based on a single modular base element to which customised components may then be attached. The attachments support the development of aquatic habitat, avian habitat, oyster beds, hydropower turbines and standard pilings for a variety of other uses (floating wetlands, moorings, docks etc). Assembled into combinations that best respond to specific conditions and needs, this system provides ongoing flexibility as social and environmental needs evolve over time. For example:

- Habitat creation. For avian habitats, the pilings have attachments and cut-away sections to support nesting sites. For aquatic habitats, vertical screens provide protection and feeding areas.

For recreating oyster reefs, metal mesh sleeves create protected areas and support for the oyster beds.

- Floating wetlands. Shoreline areas that have shallow water depth and weak currents can support the simulation of a marsh habitat. Here, the pilings contain and provide support for floating vegetated pads that function to filter the water and create additional aquatic and avian habitats.
- Turbine farm. In response to heavy river currents and tidal changes, the pilings act as supports for turbines, which can harness the water's energy and then convert it to hydropower. The multi-blade helical turbines are calibrated to the current's directional flow, to allow for maximum efficiency in capturing water-current energy.



Figure 8:The system of new modular pilings is part of a strategy to break down the city's hard edge – an echo of a past reliance on an efficient commercial border

In light of an increasingly erratic climate, this concept also builds upon the basic framework of sustainability to support resilience and adaption. A system of new modular pilings creating a grid helps ensure flexibility as social and environmental needs evolve over time. This system is also part of a strategy to break down the city's hard edge – a remnant of the past's reliance on an efficient commercial border. The scheme breaks down this condition wherever possible, providing a more diffused, modulated, green edge – one that is more conducive to human interaction and coping with periodic storm surges and rising sea levels.

Here is a living demonstration of health benefits to both the environment and to individual wellbeing. We can experience and see its benefits. It is tangible and, drawing upon historic and cultural influences, it is intellectually and emotionally engaging. Our second design project poses a more subtle challenge: how to make a visceral and intellectual connection to processes that come to fruition only after many years.

Growing soil: a case study

In 1937, US President Franklin Roosevelt said: "The nation that destroys its soil destroys itself."⁴ This powerful statement was framed within the context of the Dust Bowl, a period in the 1930s when severe dust storms caused significant ecological and agricultural damage to North American prairie lands. The phenomenon was caused by a combination of factors:

severe drought, extensive farming and poor soil conservation practices. Natural ecosystems, containing a web of plant and animal communities that help maintain resiliency in times of environmental stress, were replaced by vulnerable, extensive and intensive farming practices that lacked such resiliency. This scenario continues to be played out in communities throughout the world with a combination of new and old protagonists: congested population centres, unchecked production (agriculture and industrial) and erratic climate, along with other factors have left the land vulnerable and fragile. Soil is infrastructure.

The concepts shown here are part of a competition entry to find new uses for an abandoned industrial site, a 106-hectare (260-acre) former quarry in the north-west of England. Years of unrestrained activity with no efforts towards remediation left the land barren and unusable. Exposed to wind and rain and adjacent to a major river, erosion is a continual threat to the nearby community and communities downstream. Ironically, productive agricultural land is at a premium in this area. As part of a regional government environmental remediation effort, the project's goal is to provide social and economic benefits to the surrounding community while restoring natural woodland.

We saw the project as an opportunity to strengthen community – human and non-human – through the land by asking the question, "How do you heal an unhealthy site?" The resulting design revolves around two interventions: land forming and managed succession.

Land forming is based upon the principles of Keyline design,⁵ an agricultural technique developed by PA Yeomans. This system of land planning and management, used in both rural and urban settings, is based on the natural topography of the land and its rainfall. It uses the form of the land itself to help determine the layout of agricultural components, maximise the absorption of rainfall and minimise rainfall runoff.

Managed succession is based upon the biological processes of the nitrogen cycle to build a fertile soil. A progression of managed plant successions help fix nitrogen levels and increase the development of biomass in the soil. Plant succession is complemented by soil conditioning, including specialised tilling to loosen compacted soils and

provide channels for water absorption and managed intensive grazing.

Taken together these interventions reinforce the creation of a supportive environment: improving the soil's structure and fertility, improving water quality, providing economic productivity, and establishing a shared connection to the land.

A phased implementation plan is proposed to address the immediate need for stabilisation within a long-term vision. Once the ongoing process of topsoil production is in place, the site will be configured to incorporate several types of protected natural habitat, a working demonstration farm and training centre with a commercial outlet for the surrounding community, and an ecological research centre focused on the study of sustainable agricultural practices within the context of climate change. The project establishes the framework for creating community:

- The human community, by honouring a traditional livelihood while also establishing a "new" agrarian identity with its eye to the future. For example, creating a programme of growing bio-based building materials to support the local community and establishing aquaculture in the restored water system.
- The non-human community, by creating a biologically rich, vibrant and resilient ecosystem with local and regional implications. For example, improving water quality in the surrounding rivers, lakes and wetlands and the re-establishment of migratory species habitat.

This design is about demonstrating the hidden aspects of landscape – how it functions environmentally, hydrologically, economically and socially. How does this site tap into evolving ecological and social



Figure 9:"The nation that destroys its soil destroys itself" – US President Franklin Roosevelt, 1937

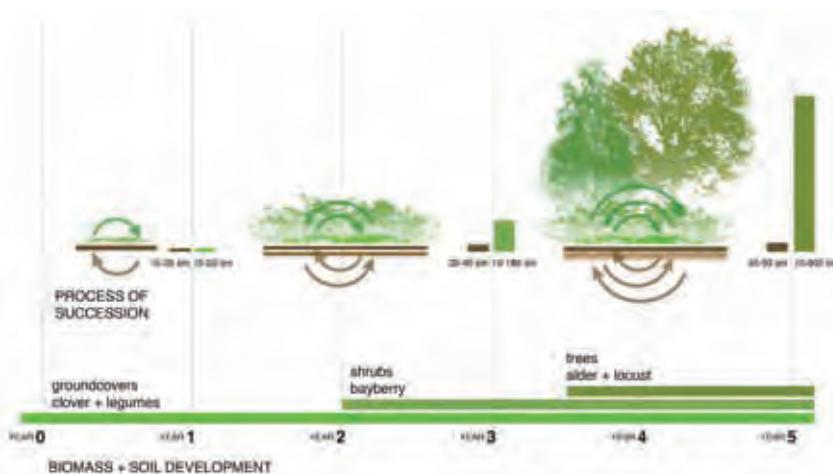


Figure 10: Managed plant succession builds upon the biological processes of the nitrogen cycle and biomass development to help create a fertile soil



Figure 11: The design explores the hidden aspects of landscape – how it functions environmentally, hydrologically, economically and socially

dynamics to become healthy and resilient? Can the site be abundant enough to anticipate an unknown future? How do we demonstrate process – at the small scale of soil-making activity and at the larger scale imposed by changing climate? These issues are not tangible. And while some of the processes can be witnessed on site, like the yearly changes in crops, others must be appreciated through more abstract means. Building awareness for these issues could be part of the research centre's mission. In this way, individuals can appreciate and participate in the long-term processes that make each of us stewards to the earth.

An awareness of health in its broadest sense

What both projects demonstrate is a greater awareness to long-term effects of our technological interventions and the opportunity this awareness offers looking to the future. The western medical model has been altered from a reductionist one of treating isolated symptoms to seeing patient

care holistically. It has embraced complexity. Environmental design must follow a similar path in order to address the complex issues we face and offer hope and health to future generations. It must be more sophisticated as we use natural resources more efficiently with technologies that neither merely delay harmful consequences to future generations nor benefit one part of the environment at the expense of another.

Faced with the dramatic circumstances of climate change, communities are at increased risk of crisis and disruption. Resilience must be thought of in terms of environmental and human systems. Salutogenesis draws our focus towards human and social systems – creating design solutions that can guide individual and collective interactions and choices in times of crisis. Salutogenic design allows us to reconsider the design of our infrastructure and communities to better equip people with the resources to adapt. Working together; designers and scientists can better understand the factors shaping these choices and their

influence on our communities and the environment we share.

All built environments, both urban and rural, are complex living systems with inter-dependent social, biological and technological components. Salutogenic concepts can be extrapolated to inform design choices, enhancing individual experiences and health-promoting outlooks within the framework of large-scale sustainable development initiatives. A holistic design methodology incorporating salutogenesis, natural systems and technology with physical and social infrastructure can help create a healthy, vibrant, resilient and equitable future.

Author

David Kamp, FASLA, LF, NA, is the founding principal of New York-based Dirtworks Landscape Architecture, PC. The firm was established to explore the role of nature in the designed environment to promote health and wellbeing. Current work includes civic, healthcare, cultural and academic projects.

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Genius loci

Carl Andre: Mass and Matter

Rosa Barba: Subject to Constant Change

Turner Contemporary, Margate, UK,
until 6 May

David Chipperfield's Turner Contemporary in Margate is an apt setting for the minimalist artist Carl Andre's first UK exhibition for a decade, which has been paired with the elemental and material musings of artist Rosa Barba. *Veronica Simpson* reports

Carl Andre was a leading minimalist artist of the 1950s and 1960s, a contemporary and friend of Donald Judd, Dan Flavin, Robert Morris and Sol LeWitt, and – then and now – a hero to many a modernist architect. Andre's preference for boiling his sculptures down to the elementals puts the materials themselves in the spotlight. In a single gallery there are eight of his sculptures created between 1967 and 1983, and several of his typed poems from the same period. The sculptures are assemblages of 'raw' industrial materials.

It was his celebration of the ordinary and the industrial that is credited with redefining the world of sculpture for a whole generation of artists. It also opened up to many architects the power of generous, repetitive and simple slabs of pure material, whether brick, wood, stone, slate or metal.

In Timber Piece, a collection of uniform, thick cedar blocks is neatly stacked like a giant game of Jenga. Elsewhere, a carpet of 100 worn metal plates, blotched with slate grey and petrol blue (4x25 Altstadt Rectangle, 1967) are laid out on the floor, and visitors are encouraged to walk across them. There is nothing to disturb the line of plates, nothing out of alignment, and the same is true of the timber block. The simplicity and repetition is powerful. It enables the materials to sing out, highlighting their patina, sheen, coloration and texture – the density and quality of their presence. The effect is calming, sensuous, visceral; in the same way that the presence of natural, 'industrial' material (and nature in its wilder form) is humanising in even the most severe and sterile of buildings.

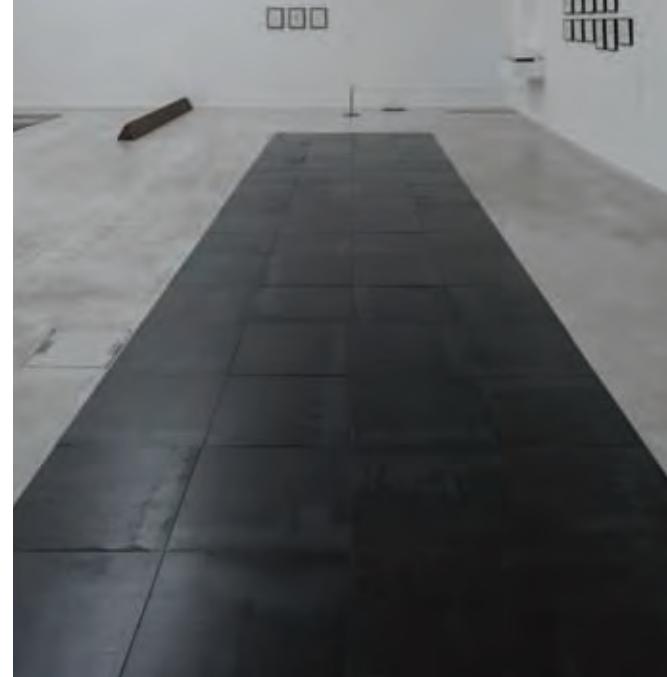


Carl Andre's Timber Piece, a stack of cedar blocks

The rhythm of language

But his dismantling of words into poems is just as affecting. Typed (using the instantly recognisable font of the distant manual typewriter era) on yellowed paper, clusters of words are blown together in drifts, shaken into seemingly casual patterns that have nothing to do with standard grammar or punctuation but create rhythms and linguistic worlds of their own. Layered tightly on top of one another, they become visually and sonically pleasing in a uniquely deconstructed way; my favourite 'poem' being the word 'sea' repeated in dense, gapless strings so that it soon ceases to resemble the word we know and transforms into poetic mark-making.

Andre's work plays with weight, scale and density in ways that make you acutely aware of the collective and individual presence of each component, like the best modern buildings – like David Chipperfield's Turner Contemporary itself, standing right on the seafront in its quietly monumental, shed-like bulk. Its simplicity – six identical volumes, enclosed in a grid of clear and opaque, acid-etched glass – make it a building both dense and light, quietly complementing the drama of the churning sea and skies.



Sculpture, reduced: Andre's 4x25 Altsdat Rectangle (1967)



Above and top: stills from Rosa Barba's Subconscious Society (2013)

Meditations on decay

Paired with Andre is the work of Italian/German visual artist Rosa Barba. The first piece you encounter is a film (*Subconscious Society*, 2013) noisily broadcast onto a screen from the large, clunking spools of a bisected vintage projector. Commissioned specially for this exhibition (jointly with Manchester's Cornerhouse gallery), this piece apparently used the last remaining reels in the world of Fuji 35mm film to record the neglected and wild spaces around Margate and Manchester. First, the camera pans across a ghostly collection of what appear to be rusting oil platforms: rotten, uninhabited, they are eerily enhanced by the film's soundtrack of industrial noise, whose grindings, groans and low resonant clangs play a duet with the clack of the projector. The rusting platforms give way to aerial shots of grassy, wild coastline, with scrubby greenery and bracken appearing – like mould – to creep up to the sea's edge. Veins and arteries of sand split these clumps of foliage into delicate patterns.

At another point a girl leans at the edge of a wooden platform in a great hall (Manchester's derelict Albert Hall) with the flotsam of neglect all around her, motionless in a space designed for congregation and clamour. Then we're surveying the crumbling remains of an old pier; the camera panning slowly and lovingly over a broken bridge, pressing the pattern of the damaged planks against the bleached out sky into your retinas – a mesmerising meditation on decay. And then back to more swampy dunes. But here, the paths that time and tide have wrought between grass clumps emerge as complex and beautiful as hieroglyphics, as elaborate as Moorish tilework, but more wonderful in that no human hand was involved in their design.

In a second room, a line of anatomised projectors spool loops of transparent film through their metal hinges, revealing nothing of what is on them, but hypnotising the viewer with their endless churning. Meaning is not the issue, but feeling and being take priority for both Barba and Andre. The effect on the viewer is of a heightened awareness of time and matter, substance and space, leaving you far more alive to the physical qualities of the world around you; a happy state which the quiet generosity of the gallery's spaces – and vistas – only serves to enhance.

The Rediscovery of the Wild

Edited by Peter H Kahn, Jr and Patricia H Hasbach

MIT Press 2013

£17.95/US\$25

With the world's population heading inexorably for mass urbanisation, and every aspect of our lives increasingly mediated – and observed – by technology, the lure of the wild seems to reach ever more totemic status. We crave that which is untamed, unmediated, unmanageable in our landscapes, as evidenced by the increasing market for extreme adventure holidays or – at the luxury end – exclusive experiences in the world's wildest outreaches, from ice hotels to minimal-impact (but maximum comfort) safari retreats.

What is it about the wild that speaks to us so profoundly, right now in our evolution? Architects and urbanists increasingly recognise the impact on our collective and individual wellbeing of proximity to nature (if not actual wilderness). They try to deliver some craved-for rebalancing through the skilled deployment of natural materials and the creation of places or spaces that maximise our awareness of diurnal patterns and the changing seasons, through vistas and parks and greenery. But what role can the wilderness play in rebalancing our urban lives – and how wild does it have to get before we feel the benefits?

This book, with essays culled from a wide range of disciplines (anthropology, environmental activism, psychotherapy, biology and philosophy) is less interested in answering these questions than generating a greater awareness of what we, as a species, are doing to harm our wild cohabitants on this planet – and in so doing, harming our own habitat as well as our prospects. A beautifully written essay by Cristina Eisenberg (*Quantifying Wildness: A Scientist's Lessons about Wolves and Wild Nature*) takes us deep into the forests around the Montana mountain ranges, tracking wolves and keeping a maternal eye on their breeding (despite the local ranchers' enthusiasm for shooting them). Eisenberg reveals how interdependent the wolves and the local ecosystem are, highlighting the damage that removing 'apex predators' like the wolf then inflicts on the indigenous flora, leading to massive overgrazing by the untrammelled deer population.

Losing track of nature

In among the ecological evangelism, there are nuggets to take away and apply to improve our own narrow urban existences. Biologist and ornithologist Bridget Stutchbury highlights the pleasures of connecting to wild nature simply through observing birds at a backyard feeder; but she also shows through her own deeper investigations – tuning in to the rituals of bird life, and watching patterns of territorial and reproductive behaviour – that this is where real riches lie for anyone who has time, opportunity and inclination to properly observe them.

Gail F Melson's chapter, *Children and Wild Animals*, is probably the most clearly illustrative of the potential that our wilderness encounters hold. She suggests that engagement with wild animals helps foster children's perceptual, cognitive, social, emotional and even moral development in the way that they "reflect and refract the self, act as social others, and prompt moral reasoning about other species and one's place in the universe." Zoos, parks and aquariums are all educational in this respect, says Melson – though it's the accompanying adult that needs to mediate these experiences to help children extract the maximum insight and engagement.

For psychiatrist Ian McCallum (as expressed in his chapter, *A Wild Psychology*), "the human psyche is alive with tokens of the wild. And yes, I think we have been negligent. We dropped these tokens... We have gradually but progressively lost track of our animal nature and what wildness really means." Both McCallum and environmental activist Dave Foreman (*Five Feathers for the Cannot Club*) wish to reinstate in our consciousness the insights and philosophy of Charles Darwin with his belief that we as humans are on the same evolutionary continuum as our fellow animals, our desires and behaviours no more nor less important than theirs. As Foreman says: "We are all kin, from microscopic wrigglers to cloud-catching coastal redwoods and burly great blue whales. Such a kinship... should broaden our view of life."

This book won't convert the sceptical hedonist nor cure the worst resource-depleting consumerist tendencies, but if it does nothing else, it provides convincing encouragement to weave opportunities in our daily life, in the design of our homes, our workspaces and our institutions, for regular re-engagement with nature and the wild. And in the process maybe we'll become a slightly better, less greedy, more grounded in the here and now version of our species.

Veronica Simpson is an architectural writer

THE REDISCOVERY OF THE WILD

PETER H KAHN, JR & PATRICIA H HASBACH



We crave that
which is untamed,
unmediated,
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St. Mary's Hospital, Sechelt, British Columbia, Canada / Farrow Partnership Architects in association with Perkins+Will
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