

eco EDGE 2:

THE URGENT DESIGN CHALLENGE IN
BUILDING SUSTAINABLE CITIES

images

courtesy of EcoEDGE and
Mechthild Stuhlmacher

text

Vrushti Mawani and
Esther Charlesworth





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GIVEN the current predicament of urban areas now housing more than half of the world's population for the first time in human history, the need to recognise specific housing and infrastructural issues posed by cities is more urgent than ever. There is also a need to identify and learn from sustainable design solutions and strategies that address these problems in ways that may show designers a path for future spatial interventions. With urban environments facing the urgent challenges of climate change, exponential population growth, a history (or currency) of conflict, natural disasters, and the need to establish or maintain a cultural identity, strong, sustainable design responses to these problems are beginning to emerge in different parts of the world.

The following article looks at examples of sustainable design that will be discussed at the forthcoming EcoEDGE 2 Conference, the sixth conference in the CityEDGE International Urban Design Conference Series hosted by the City of Melbourne since 1998. Profiling cities that are attempting to combat climate change, and cities that require comprehensive strategies to deal with the challenges presented by their distinctive socio-political issues, population growth and urban expansion, the conference will feature projects from leading architects and urbanists from the Middle East, the US, Europe and China, demonstrating their attitudes towards sustainable design.

The various well-publicised political and humanitarian crises spotlighting the Middle East often overshadow the enormous construction boom, and consequent debates on sustainable development underway in this region. Responding to massive needs for reconstruction in cities like Beirut, while building from tabula rasa in situations like Dubai, the Middle East presents a number of challenges and furnishes examples of both short-term large scale development and sustainable design and planning.

Architect Bernard Khoury returned to Beirut from the US after the 1975-90 Civil War with a desire to get involved in the design process underway during the city's massive post-war reconstruction. Most of the reconstruction plans at the time were being drawn up by a private real estate development firm, Solidere, and while people were initially very optimistic about the rapid reconstruction, since this seemed to herald the city's recovery from the widespread devastation brought about by the war, there was soon considerable anxiety about the potential sterility of a generic built environment entirely comprising sleek glass and steel high-rises.

Khoury, increasingly critical of these plans, reacted by creating radical architecture that recognised and confronted traumatic events, rather than negated them. An emphasis on not working from tabula rasa becoming the basis of sustainable architecture for Khoury, this attitude of his has been evident ever since his initial experimental project 'Evolving Scars', a study of the process of demolition of the Beirut city fabric.

Expressed in terms of a non-specific concrete slab building encased within two layers of glass he termed the 'memory collector', his design showed a giant mechanical arm ripping out the concrete core and depositing it inside

"Across the globe, things are happening that are similar to what's happening in Melbourne: there is an overwhelming dominance of the built environment over the natural environment; there is the dominance of mass consumption over the social and environmental landscape... (and) roads and cars, which we once [fetishised] as those sources of freedom, have become now processes of imprisonment within tracks of bitumen and layers of carbon fumes..."

– Paul James (director, Global Cities Institute, RMIT) at Future Melbourne, 2007



the glass membrane – the proposal being one of turning the process of demolition of war damaged buildings in the city into a collective architectural experiment. Refusing to delve into a sentimental past or a hypothetical future, 'Evolving Scars' became an explicit political statement opposing the prevalent urban planning attitude in Beirut.

Entrenching this attitude of confrontation with Beirut's traumatic history through architecture, Club B018 won Khoury an honourable mention from the Francesco Borromini International Award for Young Architects. A nightclub built on the site of a refugee camp formerly home to some 20,000 Palestinians (which had also been the staging ground for the massacre of those self-same refugees) – the fundamental expression of B018 is derived from reacting to the volatile and complicated history of the site. In 1976, one of Beirut's armed militias embarked on a large scale attack that completely wiped out the area. The fabric surrounding B018, in its contradictory scarcity to the dense urban fabric across the highway that borders the site, bears wounds from this attack even now, more than three decades later.

The paradox created by imposing a recreational activity zone on a place with a history of conflict reflects B018's emphatic repudiation of the attitude whereby architecture rejects the incorporation of site history into its core design because of the disturbing associations that might result.

The club's façade is built below ground, into the ground plane – the purpose being to avoid overexposing what could easily be perceived as a paradoxical monument.

The building is embedded in a circular concrete disc slightly above tarmac level. At rest, it is almost invisible. It comes to life in the late hours of the night when its articulated roof structure constructed in heavy metal retracts hydraulically. The opening of the roof exposes the club to the world above and reveals the cityscape as an urban backdrop to the patrons below. Its closing translates a voluntary disappearance, a gesture of recess. The building is encircled by concrete and tarmac rings, and the concentric parking spots frame the building in a carousel formation. At night, the continuous motion of the visitors' cars animates the parking and becomes an integral element of the club's scenario. The entrance is located at the south end of the low-lying metal construction where a stair leads to two consecutive 'airlock' spaces manned by scowling bouncers. Strewn across the concrete pavement floor of the underground hall, sofas with collapsible backs serve as elevated dancing surfaces that stage performers.

Ultimately, Khoury's desire is to create an architecture that is truthful to and reflective of Beirut's reality – that refuses to level out the contradictions that lie just beneath the city's new surface.

In the context of the trauma and conflicts that make up the urbanity of Middle Eastern cities like Beirut, the challenge of sustainable design lies in an emphatic distancing from the sanitised and generic built environment offered by other cities. A very different context for reconstruction, though equally desperate for holistic sustainable design strategies, is offered by New Orleans, devastated by Hurricane

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Mechthild Stuhlmacher's De Kamers project was designed not just with environmental sustainability in mind, but also as a means of regenerating community. The building is designed to evolve with its surroundings over time, offering multi-functional spaces that can be used for any number of cultural activities.

Katrina and the subsequent flooding. With strong cultural specificities entrenched into the city's fabric, any process of reconstruction aiming to be 'green' needed to take into account the local history and materiality of the city.

NOLA shotgunLOFT, proposed by New York architect Frederic Schwartz, is one of the six finalists for the sustainable design competition for New Orleans. It employs intelligent planning and design that revitalises the New Orleans landscape by using 21st century versions of local building and landscape styles. The shotgun house, a venerated residential unit model in New Orleans, is reinterpreted in terms of environmental considerations and efficiency required in new design, resulting in the shotgunLOFT; the new economical, adaptable and sustainable typology for New Orleans.

The shotgunLOFT consists of loft living spaces combined with pre-fabricated kitchen and bathroom cores in one-to three-bedroom units. Choice of materials is dictated by what is locally available and recyclable: telephone poles, southern pine, bamboo screens and floors, and recycled wood wall panels. Use of corrugated iron sheets from local post-Katrina recycled steel provides a very keen reference to the industrial character of the site. Built 1.2 metres above ground on stilts for efficient ventilation, 12 shotgunLOFTs come together to produce maximum density, in turn minimising exterior exposure of the units and conserving materials and energy.

Demonstrating how environmental efficiency can be accommodated with cultural specificity and how these two aspects inform the urban quality offered by New Orleans, the resultant scheme of the NOLA shotgunLOFT is, as self-described at the final presentation of the proposal, "pragmatic, ecological, economical, efficient, innovative, relevant and realistic".

A third context for revitalisation is offered by urban areas consisting of old dilapidated neighbourhoods – built fabric that has ceased to serve efficiently the functions required by contemporary life. In many western and southern European countries, revitalisation schemes are seen as opportunities to further urban sustainability. One such project is the urban renewal of the 19th century neighbourhood of Vesterbro, Copenhagen. Spearheaded by Michaela Brüel, architect and Head of the Division of Planning and Architecture of the Municipality of Copenhagen and representative of the European Green Cities Network (EGCN) in Copenhagen, the Hedebygade project at Vesterbro was launched in 1998 and addressed the renewal of a building block of 350 apartments built around 1888 – the driving force of the project being the emphasis laid by tenants on resource saving restoration solutions.

The project emphasised a close involvement of residents with the consultants and the urban renewal firm SBS Byfornyelse. Seeking to optimise the consumption of heating, hot water and electricity through the use of new energy saving technology, the project also intends to minimise water usage and ensure good interior environments. The aim was to reduce the energy use for heating and domestic hot water by 50 to 60 percent, and at the same time obtain 20 to 40

percent savings on electricity and water use, in comparison with the usage figures prior to revitalisation.

While the general goal of the project was to make an architecturally well-integrated, energy efficient overall solution for multi-storey buildings, the project also makes use of renewable energy.

The Hedebygade project at Vesterbro achieves its objectives of being environmentally efficient, while also promoting community development by engaging residents in the process of revitalisation. Community involvement in urban design and planning processes is fast becoming recognised as crucial to the production of sustainable and affordable housing solutions in contexts like Europe and the US, to counteract the effect of isolation often produced by the sizeable low-density suburbs built in these countries in previous decades.

Another emerging method of tackling the lack of social and cultural infrastructure in such cities is the provision of cultural hubs, which are sustainable in their social content, but also sustainable in their environmental efficiency – spaces that encourage both sociability and inspiration within the area. Mechthild Stuhlmacher, partner of Korteknie Stuhlmacher Architects in Rotterdam, recognises and incorporates this in her design – the challenge of sustainable design to her being producing an architecture that is clear, simple, healthy and robust, with good proportions and acoustics, pleasant to live in and to use – an architecture that fits into the city, landscape and time, and that ages gracefully. Korteknie Stuhlmacher Architects aims for a sustainable architecture that combines contemporary spatial, programmatic and aesthetical strategies with tectonic and material conditions; an architecture that leaves space for use and allows for improvisation, adaptation and change.

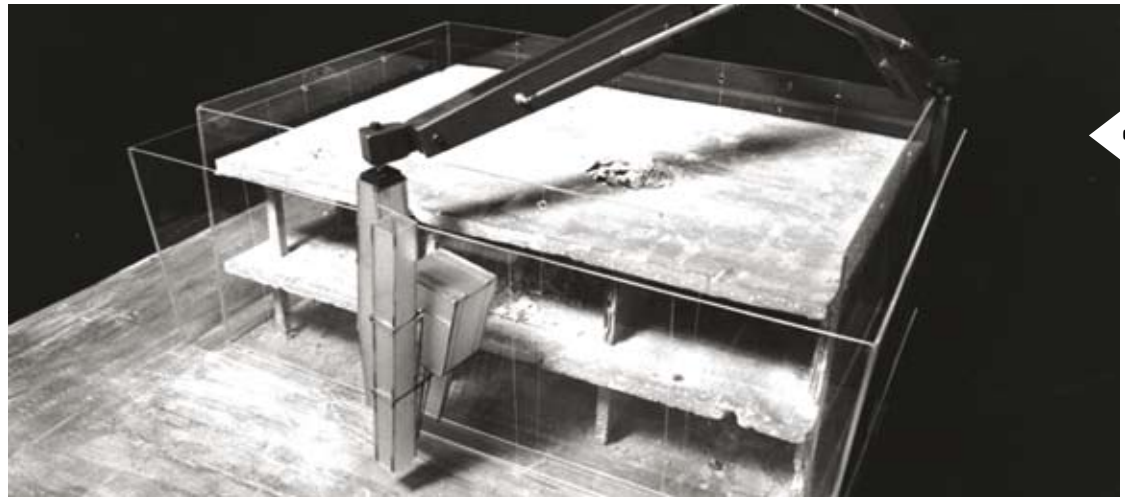
Noted for decades for its sustainable building policy-making, the Netherlands considers the issues currently of most concern to consist of developing comprehensive design practices that improve the environmental performance of building stock through more efficient technology. While the initial uptake of sustainable practices in the Netherlands in the 1970s followed the principle of self-sufficiency and dis-connectivity from existing infrastructural networks, it was soon realised that design strategies could not shut themselves off from modernity. Instead, what was required was the incorporation of environmental know-how within the decision-making process to manage environmental impacts via a combination of passive, nature-based and low technological approaches, as well as active and state-of-the-art solutions and techniques.

Cultural centre 'De Kamers' ('the rooms'), in Vathorst, designed by Stuhlmacher, deals with all of these issues at once – Vathorst being typical of the large, low-rise mono-functional suburbs designed in the Netherlands in the 90s, lacking cultural and social infrastructure.

Stuhlmacher's attitude of producing architecture that allows for incremental growth is reflected distinctly in this project. The building and its activities are meant to evolve with their growing surroundings over time, offering spaces for



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03. The NOLA shotgunLOFT proposal by New York architect Frederic Schwartz is one of six finalists in a sustainable design competition for the redevelopment of New Orleans post-hurricane Katrina.

04. The 'memory collector' – Bernard Khoury's Evolving Scars project proposed to literally tear the hearts out of Beirut's war ravaged buildings for preservation purposes.

various cultural activities and events such as theatre, film and creative education. The core of the project is its living room – a space for social interaction, expression and inspiration, which is a direct reflection of the ideals behind the design – a public 'living room'; a welcoming space for everybody.

Employing a clear, simple and sustainable structure made up of sophisticated building systems imported from Germany and Switzerland, the structure guarantees high-quality spatial and acoustic qualities without any additional linings. The flexibility of the structure to grow and change is reinforced by the use of timber walls, floors and roofs. A new, environmentally efficient procedure of exterior cladding with stained heat-treated timber – making European softwood durable – is used.

The project involves users of the building in the design process by incorporating a plinth designed as a kaleidoscopic band of hand-decorated panels covered with artwork, graffiti, posters and texts made by the users. Semi-enclosed spaces in the garden are defined by the composition of the cubes, and serve as gardens and terraces. Here, the mural-like plinth turns into a wainscoting of user-designed wallpaper. The goal of the project is to be accessible, open and inviting, and the design expresses this

by large sliding doors, which also represent the seamless treatment of the indoors and outdoors.

In a context like the Netherlands, green design gets defined as environmentally friendly design that also aggressively tackles the issue of incremental growth rather than large scale development – design that very consciously promotes community building by providing spaces designed for inviting user-participation in creating the spaces' expression – spaces that evolve along with changes in the lifestyles of the people.

Posed against the European context of low scale development, where environmental efficiency and the establishment of a cultural identity encouraging social cohesion become paramount, Chinese urbanity lies at the extreme other end of the spectrum, offering an exploding population and the consequent tendency of cities to sprawl at what seems to be an uncontrollable rate.

Neville Mars, architect and creative director of the Dynamic City Foundation, along with his team, has been developing the concept of Dynamic Density – an urban environment that can maintain its proportions and ideal compactness as it grows or diminishes. Dynamic Density also acts as a tool to map rapidly changing environments

and respond with strategic proposals. China and its highly dynamic urban environment, developing without effective over-arching or long-term strategies, proved to be a context that would most benefit from a research and design project based on Dynamic Density.

The project acts as an initiator towards formulating an integrated design strategy that addresses urbanisation in China – propagating the need to contain sprawl and to increase urban density to achieve urban form that is advanced and sustainable. The primary concern of the project is the inevitably increased incongruity between the coastal region and the rest of China, and the irreversible loss of farmland and consequent ecological disasters that would result from a continuation of urban sprawl.

Given the mass migration of rural populations to China's urban parts, no holistic strategy yet exists that proposes sustainable solutions for quality urban environment and housing while also containing urban sprawl – despite the fact that the latter is considered imperative by social scientists and planners. Dynamic Density proposes to use the irrefutably massive scale of projected rural migration towards developing a strategy that addresses the dynamic conditions of China, and that will guide its urbanisation process towards more compact and comfortable cities.

Another strategy of dealing with sprawl in Chinese cities is offered by James Brearley and Qun Fang of BAU, Shanghai, through their Network Cities proposal. The primary issue addressed by Brearley's proposal is the conventional non-specific utilisation of the standard urban planning formula in the current extraordinary pace of China's urban development. To Brearley, the problem is that, "The formula is extremely efficient in creating vast expanses of urban substance at low cost and high profit to the state. While it guarantees well-engineered cities, it fails to provide a foundation for sustaining social, economic and environmental life."

Manifesting itself as large scale, highly segregated land-use zones connected by sparse road grids, the application of this standard formula produces a Chinese urbanity consisting of separated housing zones, further characterised by an assortment of residential enclaves, each occupying an entire super-sized city block, and surrounded by large city streets lined with fences.

According to Brearley: "Although enclaves have a long tradition in China, the contemporary version introduces new characteristics: an exclusion of non-housing programs, a super scale and a uniform adoption of a building typology often taller than 10 floors. These gated communities are less successful at creating community than they are at creating social isolation.

"The opportunity to balance the isolated enclaves with an active public realm is overlooked. Likewise, the opportunity to allow an active business life in close proximity to the large market of dwellers is lost. The new cities are high in density; however, they are also absolute commuter cities. These are not cities of urban convenience. Experiences of developed nations have shown that land-use zoning is difficult, if not

impossible, to undo. With thousands of cities throughout China applying the default planning formula, a reappraisal of the current formula, and a range of new approaches, is urgently and crucially needed."

BAU and Steve Whitford developed the Network Cities strategy in 2001. Since then, five BAU proposals have been the winners of invited competitions in China, and a 12-square kilometre addition to Chengdu city is currently under construction. The primary intention of Network Cities is to achieve integrated, not segregated, cities, the implementation of which is proposed by continuous networks of land-use zones. Creating adjacencies of disparate land-use zones, Network Cities proposes to reintroduce complexity into the city fabric without any loss of clarity, as well as increasing flexibility for future development.

The merit of the proposal, according to the Network Cities manifesto, lies in the fact that, "Continuous networks of working, living, shopping, parks, entertainment and services can create an urbanity of equity, economic opportunity, walking convenience and social interaction. While urban planning alone cannot guarantee cities which sustain culture, economics and the environment, the networks strategy is one way to maximise their potential to do so."

Exemplifying strong, distinctive attitudes towards sustainable development, these projects embody the different challenges to sustainability faced by the design profession in different parts of the world. And while all of them differ in the detail of the challenges with which they are confronted, in delivering a sustainable solution they must nevertheless all come to grips with the never-before-seen levels of urbanisation that have come to define our built-environments in the 21st century. This, and the many other related issues it presents, will be the focus of the forthcoming EcoEDGE conference. **_ar**

The CityEDGE series fosters discussion and debate on critical urban design, architecture and planning issues facing cities in the new millennium, and through presentations on leading local and international case studies, provides a forum for architects, landscape architects, urban designers and planners to review the rapid and radical development of contemporary metropolises.

EcoEDGE 2, the sixth conference in the series, will be held from 14 to 16 February at Federation Square, and structured along the themes of Green Local Governments, Green Urbanism, Green Aesthetics and Green Housing. For further information and registrations, please visit the CityEDGE website at www.cityedge.org.au, email ecoedge2@melbourne.vic.gov.au, or call 03 9658 9658.