

Sustainability challenges faced by subtropical cities

The place/identity agenda in achieving sustainable urbanism in the subtropics

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Back in 2002, with mounting concern that growth pressures were impacting negatively on Brisbane's character and identity, the Brisbane City Council established *City designed for subtropical living*, as one of eight strategic themes that it saw as critical to the successful future liveability of the city. Happily this remains part of the re-worked city vision to 2026...

Council partnered with QUT, and subsequently the State Government's Office of Urban Management to fund a collaborative centre to develop a knowledge base in subtropical design, as it pertains to the cultural landscapes and built fabric of Brisbane and South East Queensland.

The Place/Identity Agenda

The partners' vision embraces the Place/ Identity Agenda, a long-established understanding that successful ideas about the built

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environment, are interconnected with ideas about regional identity, and that regional identity has a significant role in the formation of a built environment which is ecologically sustainable.

Over time, the people of Queensland developed a synergistic relationship between the urban environment and the subtropical setting, creating a unique lifestyle supported by a unique built environment.

However, in recent decades this locally appropriate response is giving way to places that have little regard for the vagaries of climate and an uneasy relationship with their surroundings.

As a result, subtropical character and identity, the very values which make the place so attractive, are considered to be under threat, / and these same pressures are threatening water and clean air resources.

(Energy seems in abundant supply but its continued delivery through coal-fired power stations is inter-connected with an uncertain water supply).

As Prof Georgia Butina Watson noted in her keynote address to Subtropical Cities 2006, as a starting point in speculating about what can happen to bring about positive change, the place/identity perspective is extremely valuable, but it would be blinkered to focus on it exclusively, and such an

approach risks inappropriate outcomes such as inauthentic historicist pastiche which only serve to exacerbate the problem.

Watson stated that place-identity is not the be-all and end-all of design. Though important, it is only one amongst a myriad of issues which have to be addressed in practical design work.

In cities across the world upheavals are occurring along the known 'fault lines' of:

- Space and density
- Community health and urban form
- Carbon emissions and urban form (and building design)
- Significance of the urban/rural interface
- Scarcity of resources (notably water) and spurs for large-scale behaviour change.

The Centre's position is that inevitably, urban development that responds to 'place' by being designed with landscape, lifestyle and climate, rather than in conflict with these values, better underpins a vibrant society, a viable economy, a healthy environment, and an authentic sense of place.

The SEQ Regional Plan 2005 – 2026

The SEQ Regional Plan 2005 – 2026 seeks to manage growth sustainably by promoting compact urbanisation, and a shift to a level of density of a scale and type not previously experienced in Queensland.

The Centre supports this strategy but has identified the conundrum of 'densification' versus 'character and lifestyle' as one that needs particular attention.

Policies which promote compactness and densification, if not accompanied with appropriate design principles and strategies tailored for the subtropical condition, will lead to a loss of the very qualities, particularly in the public realm, the Plan is seeking to confirm and create, and will inevitably accelerate the strain on resources of all types.

Landscape architect, Alan Chenoweth, has pointed out that in SEQ the traditional subtropical garden, with a rich diversity of plants in multiple layers, and an emphasis on their architectural form and foliage offers the greatest opportunities for a sense of place which is both instantly recognisable and part of our landscape heritage.

However this paradigm is challenged by the perceived need for more compact urban areas, and by the current water crisis. Yet, a compact urban form needs to use every opportunity for 'greening' the city and character reinforcement.

The opportunity of subtropical urbanism

In a place where low-density sub-urbanism is the tradition, high-density infill development needs a receptive community.

The Centre for Subtropical Design set about asking how we could achieve ecologically sustainable urbanism in the subtropics / how we could shift the concepts of density and compact development from being seen as a problem, to being an opportunity for a sustainable future that could be received positively.

Even with the climatic attributes of South East Queensland, subtropical urbanism seemed complicated to achieve because of the existing structure of urbanized areas.

We realised we had to develop some practice-orientated ideas about “how to think about it” as well as to develop useful ideas for “how to do it”...

And much of this work on principles and strategies can be accessed at our website www.subtropicaldesign.bee.qut.edu.au.

Knowledge sharing between peer groups is an important way of testing ideas. We organised a conference to bring together people from subtropical cities around the world to exchange experiences on planning

and designing using local distinctiveness, through attention to climate, cultural values and landscape, as the basis of ecological sustainability.

We looked to places with a similar climate and found....

Similar stories of regions subject to population growth, resource use and land development pressures that stress both their ecological integrity and social fabric, and the haphazard patterns of development that have resulted.

Speakers joined us from largely maritime /east coast cities: Durban, Brisbane, Fort Lauderdale, Florida, Savannah Georgia, Chongcing, in China.

We found similarities....

Population growth and urban sprawl

The metropolitan area of Fort Lauderdale (the only region in continental USA with a subtropical climate) encompasses Broward County, part of a sprawling metropolis spanning from Miami to Palm Beach and sandwiched between the Everglades preserve and the Atlantic Ocean.

Broward County's stunning transformation from wetlands to sprawling metropolis, from a population of only 5,000 or so in 1920 to over 1.6 million in 2000, is shown in

this graphic illustration provided by Anthony Abbate (Broward Community Design Collaboration at Florida Atlantic University). Population density is about 14 inhabitants per hectare. The rapid pace of development is unabated.

Abbate simply stated that Broward County has no available greenfield land left for continued expansion, yet it anticipates a population increase from 1.6million to 2.6 million by 2030.

This of course parallels closely local forecasts for population growth in the SEQ conurbation over the next 20 years.

...and we found differences which are just a matter of scale

Speakers drew our attention to different scales and complexity.

There were challenging contributions from mega cities.

Carlos Leite (MacKenzie Presbyterian University, Sao Paolo) described 100 years of environmental mass destruction in the Brazilian mega-city Sao Paolo.

This image shows the growth of the urbanized area over 100 years – original territory in 1900, and in 2006. The population in 1900 was 200,000; now the population of the metropolitan region is estimated at 20 million people - 11% of Brazil's total population.

The images are at different scales. The red area on the map on the left is transposed on to the larger satellite image on the right.

The winding river in a verdant valley on the left is now that straight line on the right. The river was straightened and channelised in the 1940's to ease development.

(Though the Brisbane River has undergone various transformations since white settlement, its curves survive, though if North Bank goes ahead its value as an open space resource in the city centre is threatened.)

We encountered lifestyle differences....

Sao Paulo headquarters more American companies than any other city outside the USA. It also has the most crowded air space both in Latin America and the Southern Hemisphere and the highest helicopter ownership per capita.

The latter two facts are illustrative of the extremes between Sao Paulo's rich and poor – the city's wealthiest citizens no longer inhabit the public realm at the ground plane, choosing instead to fly across the city.

... and other similarities : urban infrastructure

The supremacy of the car- and the universal acceptance of the automobile are prevalent . Florida's freeway system on the right slide, looking not too dissimilar to SEQ, and on the left, part of Sao Paulo.

There are about 5.1 million cars in Sao Paolo generating 5.6 tons of pollutants per day in the atmosphere. An impact that intensifies respiratory diseases, especially in winter, as the temperature inversion keeps air pollution at the lower strata.

Here you can see the canalised river.

The condition of the two main rivers in Sao Paolo is precarious due to discharge of sewerage from households, industry and storm water. What could be an opportunity for outdoor leisure and water transportation are perceived by the Paulistas as degraded open sewers.

On the subject of demand for potable water.....

African cities are similarly plagued by lack of sanitation infrastructure and largely an inability to meet demand for potable water.

Prefaced by a chilling picture of how HIV AIDS is decimating communities, Rodney Harber described life on the streets as “convivial” despite grinding poverty – traffic chaos, visual chaos, bedlam, street trading.

Compare this with our developed nations’ scenario, where increasing demand for water (often not related to necessity) has seen existing potable supplies struggle to meet demand.

Open Space – issues and trends

Several speakers drew our attention to the contribution that open space makes to inhabitants' quality of life and the educational role of open space in providing models for responsible environmental behaviour (the model for individual action).

Carlos Leite described a deficit of green space in São Paulo. The city has only 4m²/inhabitant when the minimum suggested by the World Health Organization (WHO) is 12sq m/inhabitant. The open space deficit is aggravated by the formation of illegal favelas in environmentally protected areas, resulting in devastating loss of Atlantic Tropical Forest.

Professor Georgia Butina Watson from UK's Oxford Brookes University argued that the manner in which people actually identify with place is through common experiences in open space.

Associate Professor Darryl Low Choy alerted us to the importance of the regional landscape's contribution to character and identity and the challenges of appropriate planning in the urban and rural interface. He noted that open space is not meeting the increasing outdoor recreational demands of the SEQ population.

Professor Catherin Bull compared SEQ's urban/rural interface of urban sprawl with space throughout , with the pattern of dense urban development interspersed with open space in the Pearl River Delta in China.

Her analysis of Australian cities and urban regions revealed:

- increasing conflict between the social role and the environmental role of urban open space.
- continuing difficulties in achieving and maintaining open space linkages in most urban regions from the regional through to the local / suburban unit level, especially in regions experiencing rapid expansion, and
- Actual open space provisions are below those that characterise many international cities (for example, she mentioned New York, Boston, San Francisco).

Continuing the theme of sameness and differences

Current Mainstream Building Design

Tony Abbate of Florida reminded us of the work of the Olgyay's who in the 1950's comprehensively investigated the relationship between climate and environmental factors, and human comfort, regional variation and character in the built environment.

These explorations of a bioclimatic approach to architectural regionalism, were intended as an exploratory step toward influencing modern design expression, rather than as now, a means of saving energy.

In stark contrast to these intentions, mainstream design has largely developed within a modernist tradition but has evolved as part of the globalising form-production system which has so far seemed mostly to erase established place identities, rather than creating positive new ones.

Last year, in her summing up of the Subtropical Cities Conference 2006 Professor Helen Armstrong observed ironically that it used to be said that innovative ideas only came from cold climate cities like New York or Melbourne because people sat in warm coffee shops actively discussing current problems and what to do about them. But, she observed, in today's cities – no matter what the climate - everyone is inside. They are drifting in the bland anonymity of over-designed, controlled places (for shopping) where intense discussions are rare, and ideas are thin on the ground!

Abbate described how the affordability of and huge demand for air-conditioning, along with the rise of the private motor vehicle, significantly shaped the urban form of South Florida during its most intensive period of population growth. Air-conditioning eventually became so pervasive that it was actually written into the building codes as a requirement.

As a result, developers could now utilise standardised designs that no longer needed to be modified for Florida's subtropical climate, and the local context could be sublimated for conformance to those standards.

His assessment of the result is a built environment that, since the 1970s, bears little connection to the area's subtropical climate and natural environment, and that architectural knowledge has been made obsolete by air conditioning. (As shopping in an actual air-conditioned building in Florida has itself been made obsolete by the internet.)

The dual phenomena of affordable air-conditioning in Queensland and regulations requiring that residences be air-conditioned, in the guise of energy-efficiency provisions in the Building Code of Australia, have occurred later in Queensland but are gaining pace with no less veracity as we default to the thermostat for comfort control.

Prof Richard de Dear, Macquarie University expert on the adaptive theory of thermal comfort spoke about the international standards prescribed for thermal comfort in air conditioned spaces and how these are universal regardless of place, climate, culture, lifestyle, gender or age.

The message over and over was that if the current rates of non-renewable energy use in building operations and transport across far-flung suburbs are

allowed to continue, the quality of life in our communities, and the environment generally, will be severely compromised in the future.

Common theme: reconnection to place

However, a common theme amongst all the keynotes was that local knowledge is a key instrument of re-connection to place .

Abbate told of how Broward County is grasping the prospect of reversing the processes of disconnection through the mobilisation of social capital. Grass roots consultation to achieve meaning and experience in establishing local design guidelines is highly valued.

Looking to the Future

According to Professor Bull, cities of the future will be expansive rather than compact; growth is fastest at the cities' margins, where the exurbs lure residents with larger and larger houses, and new big-box shopping. Development is likely to leapfrog and resist containment by peripheral greenbelts if vigilance is not maintained.

Professor Armstrong pointed out that we will probably have to come to terms multi-nodal cities of extensive urbanized landscapes, which move beyond colourful parklands with horticultural displays to becoming working

landscapes that remediate, clean, store water and address carbon emissions.

Their proposition is that within cities it is possible to develop a new landscape aesthetic – a working landscape made up of newly connected continuous open space which ensures a closed-loop urban metabolism.

This proposal accords with the Centre for Subtropical Design's ideas for subtropical urbanism which embraces openness and permeability, and a strong connection with nature. But this requires different forms of urban consolidation, not copied from North America but reinterpreted to respond to this place.

So what is subtropical design?

Not surprisingly, many mainstream values and working practices make it hard for planners, designers and others to engage creatively with place-identity issues.

If the two overarching values of permeability and connection to nature remain as essential ingredients of our new, denser, more sustainable urban environment, not as some skin-deep style, but rather permeating deeply through all aspects from the individual dwelling to the entire region, then

the subtropical character and identity of the place can be sustained, with positive consequences for the city's future.

Can we imagine a preferred future for this region, rather than the inevitable one that only the wealthy can afford as fuel, energy and water becomes more and more expensive?

The Subtropical Cities 2006 conference was a chance to stand back, assess gains and losses, celebrate the positives — seeing Brisbane through others' eyes helped us see it as a sensuous city with much to offer, and reminded us of the value of ordinary distinctiveness - subtle incremental changes that have transformed Brisbane over the past decade - biodiversity, suburban centres re-imagined as villages for people, clean up of waterways and celebrating the river as a major open space resource. Such micro-tactics and subtle incremental changes which dwell on amenity and liveability are invaluable.

At a time when cities around the world are increasingly looking and feeling the same, and similarly adding to mounting environmental crises, it is more and more crucial that subtropical environments can produce new models for urbanism and address the problems of the contemporary city, and avoid the pitfalls already experienced elsewhere in the world.

With its mild climate and its usually moderate rainfall, SEQ is currently well-placed amongst aspiring world cities to achieve low-energy, and low-water strategies in urban development. We do not have extremes to battle (yet), we can be outdoors year round, provided we have adequate sun protection.

The Centre is focussed on design because design is about problem-solving with ingenuity, and about speculating on what can happen to bring about change. The design professions have an important part to play in creating the sustainable future we need to create.

Good design which involves the community to create a common vision, may take longer, or even cost a bit more up front, but ...in the end, the general public's interest in healthier living environments, improved air quality and a growing awareness of the cost and scarcity of energy and water resources will all hasten the imperative of environmentally responsible development in the subtropics informed by the place / identity agenda.