

# Design in the Age of Climate Change

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## Introduction

It's been interesting to see, over the last 12 months, the issue of Climate Change move from the margins to centre stage as a major federal election issue. There are also myriad publications and TV shows advising us how to reduce our carbon emissions at the level of the individual household, but what we can do at a collective level about the form of our cities seems to be absent from the conversation. And despite the fact that Climate Change is a major Federal election issue, urban sustainability doesn't even rate a mention in the publicised environment policies of either the Federal Government or the Opposition.

While more compact urbanism is *de rigueur* in many planning schemes around Australia, and we have a number of successful built examples around the country, carbon emissions maps now available through the ACF challenge assumptions about emissions in dense areas well served by public transport, and highlight the need to reevaluate our approaches to city making in Australia. The ACF maps also highlight the need for a multilayered approach to Climate Change, particularly in regards to design: there is no single silver bullet.

In recent years many design practices across Australia have been successfully working on implementing sustainability at the level of the individual product or building, and we now have a rich array of exemplars to learn from and demonstrate what can be achieved. However, we haven't made nearly the same headway in urban design and the design of our cities. Is the large house on the large block and the private vehicle lifestyle really such a deep seated non-negotiable that it's 'hand off' for urban designers in the suburbs? It is critical that we find ways to live and work in our different climatic regions that are less car dependant, less energy consuming, but at the same time enable us to keep what we love about living in those locales.

Now is the time that designers should be engaging the broader Australian community in re-imagining (possibly radically) our urban future.

## Climate Exposure

The science of Climate Change tells us cities in our regions in the future will become hotter, dryer, and at the same time subject to more intense storms, cyclones and flooding. Our coastal cities will become more likely to experience storm surges, and rising sea levels. Global warming has, according to the majority of scientists, started already, and we are likely to start experiencing the more severe impacts within our lifetimes.

In Australia, the public responses to these uncomfortable facts have been relatively recent. An article from the Courier Mail in November 2005 announces *Mankind at fault as oceans rise at double pace* discreetly on page 21. By contrast, there is now very intense media coverage of the issue, as exemplified by a July 28-29 2007 a two-page spread in the Courier Mail headlined *Climate Change at Centre Stage*, the Bulletin's themed issue of May 2007, a June 2007 Fin Review weekend magazine with a series of articles describing business leaders' response to climate change, a Brisbane News cover story, and the list goes on. My favourite example of where this issue has moved to since that obscure Courier Mail article is Al Gore featured in 'Who Weekly' under the heading 'Horror Movie Star', on the same page as Madonna and Leonardo Di Caprio.

We are now constantly offered advice through the media and myriad publications on how to reduce our carbon emissions. The ABC has a reality TV show called Carbon Cops which features two orange jump-suited environmentalists showing typical Australian households how to reduce their carbon emissions by reducing their energy consumption. Given that in

2004 Australians produced the most greenhouses gases per head of all industrialised countries (source: the Bulletin), this is a bit like watching a small child wrestle a large beast to the ground. Similarly the Courier Mail's feature on climate change offers a range of practical household energy saving measures, as do a range of books and publications. On measures outside of the home, which could be described as part of the urban realm, we are advised to "take public transport wherever possible or buy a smaller car". Don Burke's slightly more scatter gun approach in the Bulletin more plainly advises people to 'stay home'. The problem with focusing only on individual actions is that it approaching a multilayered problem at only one level.

### **Undercooked Approaches**

In Government we've seen slow action on the issue of Climate Change. At the federal political level we've seen a major shift, from resolute refusal to sign the Kyoto protocol in 1999 to being more or less forced into setting carbon reduction targets through the dynamics of the upcoming election. Environment reporter for the SMH Wendy Frew, in the Walkley magazine in January 2007, pointed out that the Howard government's stance changed around the same time that a Lowy Institute poll released in early October 2006 found **68% of Australians believed Climate Change to be a 'critical threat' that should be immediately addressed, even if it involved significant costs.** Accordingly 'Australia's Climate Change Policy', which was released in July 2007, focuses on an emissions trading scheme and encouraging households to use energy efficient appliances. Reducing carbon emissions in terms of urban form is not part of the policy.

Not that urban sustainability features more strongly on the other side of politics. I recently to attend a briefing by Peter Garrett on labour's Climate Change policy, which also contains no references at all to urban form or urban development. At the briefing I commented that it was disappointing given 80% of Australians live in cities that creating more sustainable cities wasn't part of the Opposition's environmental agenda, he replied that urban form and development was part of the infrastructure portfolio, which was a nice way of saying that talking about sustainable cities wasn't on the federal election agenda, (although I believe it *should be*).

The State Government, on the other hand, does at least have urban sustainability as part of their explicit policy. The State Government has this year released their 'Climate Smart' policy, which states:

*Well-planned and designed urban environments are an essential component of responding to Climate Change.....*

The policy seems comprehensive, so I was surprised when I visited the 'Climate Smart Living' themed government pavilion at the Ekka to go into the sustainable development section and see the display mostly dedicated to building more major roads, with a comparatively small section devoted to public transport and non-motorised transport. I also played the 'energy wise challenge' board game with my kids and noted that I would be rewarded by moving 3 spaces forward if I set my air conditioner to 24 degrees celsius and closed my curtains (rather than say not having an airconditioner in the first place, insulating my home, having a house with sunshading, moving to a shady location with a breeze or moving out onto a veranda). There seems to be a reluctance to take on difficult or complex approaches to this issue in the public domain.

Whilst these 'soft' social marketing approaches, which are echoed in the media, are probably well meant and no doubt important to get some reduction in household energy use, they seem to miss significant issues: Australians continue to live in bigger houses which on the whole are not designed for the climate, in suburbs a long way from their jobs and services that are not supported by public transport – and this is by far still the dominant mode of urban

development throughout Australia. Governments' spending on roads continues to outstrip spending on public transport. In this context, being advised to 'use your car as little as possible' is quite meaningless for many people. And while being advised to change your light bulbs and use low energy appliances is important, the fact that in Queensland the purchase rates for airconditioners continue to increase for me dilutes the joy of thinking about all of those people installing their compact fluoros. We have lagged behind European countries by a long measure in terms of widely acknowledging that climate change is happening, adopting new technologies and particularly in implementing sustainable urban development, or even getting a grip on what this might mean for us. Without doubt the latter is a major challenge. The relationship between Climate Change and urban form is complex, both politically and socially, but it will require some stronger leadership than the kind of easy-to-digest and simple approaches we've seen to date.

### **Design Heat**

The design industry as a whole has made significant inroads in terms of product and building design – there are now many examples of low emissions products, homes, office buildings, public buildings around the country. At present these examples are strong signposts for the future rather than the norm, and while a review of these might be an interesting direction for this paper, I'm going to assume that most people in this audience are aware of a range of buildings and products that are outstanding exemplars. It's at the urban scale that we are lacking strong responses to the issue of Climate Change. We are lacking a political and public recognition of the strategic value of urban design in addressing the issue, and also lacking in terms of well thought out design and public policy responses.

At the level of urban design, it may be that our assumptions about density and transit-oriented development need to be examined afresh in dealing with carbon emissions, as illustrated by the Consumption Atlas, produced by the Australian Conservation Foundation in conjunction with the University of Sydney. Looking at the spatial patterns of how urban areas contribute carbon emissions reveals the political and cultural complexity of the issue, because carbon emissions in cities are a product of a combination of socio-economic and spatial factors. According to the ACF maps, Greenhouse pollution in Queensland on the whole mostly emanates from wealthier suburbs. In Brisbane wealthy inner city riverside suburbs produced up to twice the amount of greenhouse pollution than residents in some less affluent suburbs such as Inala and Wacol. This makes the link between urban form, density, and carbon emissions less straightforward than one might think; clearly just living in a higher density 'urban village' won't necessarily reduce your carbon emissions – Fortitude Valley and Newstead (which is very well serviced by public transport) had the highest carbon emissions than any suburb in Brisbane, but were on a similar scale to lower density suburbs west of the city.

The ACF figures relate to per capita consumption in terms of resources used in the home as well as the impacts of products and services consumed. This includes all impacts that have occurred in production, manufacture, transport, retail and office work linked to the consumed product or service. The great swathes of suburban sprawl apparently aren't the areas with very high greenhouse pollution. Greenhouse pollution rates link to a complex web of consumption patterns which include transport, household energy consumption and the consumption of goods and services. According to these maps, density combined with PT alone doesn't reduce carbon emissions. Again, it's a multilayered issue, there is no silver bullet.

Our cities are very centralized. Jobs are centralized, our economies are centralized. At the same time the distribution of goods and services is dispersed. In terms of the form of cities, it's not just about where we live, but how we access all the things that enable us to live the way we aspire to.

We know that our cities can't continue to sprawl at the fringes, endlessly consuming our agricultural production areas, carbon sinks and natural habitats. Consolidation is an inevitability. What the ACF figures do tell us, however, is that continuing to concentrate wealth and density in the inner city is also not a sustainable solution. The figures also tell us that long term reorientation of our cities to higher residential densities alone will not help to mitigate our carbon emissions. In the long term we need to decentralize jobs, provide a means for more localized production of goods and services, and support a more localized economic framework with a greater range of housing choices. We also need to be more intelligent about how we consume space and resources. This applies to regional cities as well.

To me the ACF maps indicate a need for a major rethinking and strategizing about the form of our cities, as part of an integrated, multilayered approach to the issue of climate change. The issue can't be successfully dealt with alone at the level of the compact form, or the individual building, or even higher density housing.

At a design level, we need to be able to test and interrogate alternative scenarios. What is it like to live in a 'climate change resilient city'? What does that mean for urban places, other than simply engineering solutions? How much will we want to live by the water if it's cut off from us by levy walls? And if higher housing densities around public transport aren't going to be our sole solution to reducing emissions, what will be? And what could a retro-fitted suburb be like to live in? And how do you negotiate all of this with communities, and make it happen?

There are at present more questions than answers, but they are serious questions and designers have the key skills to help address them. Design is a key strategic tool for the exploration of scenarios, and creative problem solving on a large scale. It requires a high level of informed discussion and debate within our urban populations, and a high level of government intervention. It requires a recognition and implementation of the strategic value of urban design. By this I don't mean just the uncritical application of planning formulas to places, but using design firstly as a tool for reimagining and experimentation with a range of possibilities, secondly as a tool for working with communities to negotiate values of place, and finally as a key means for delivering sustainable forms and places.

### **Cool Solutions**

As an example of how design can be a key strategic tool to research what is possible in reconceptualising the forms of our cities, earlier this year Architectus undertook a design workshop which explored the concept that while it is critical that we find ways to live in our region that are less car dependant, and less energy consuming, we need to do so in a way that enables us to keep what we love about living here. At the 'Think Tank' we brought together all of our directors from offices around Australia to come up with some ideas for how we could do just that. We were lucky to have a number of our design luminaries to help us to do this, including Lindsay and Kerry Clare (designers of GOMA), Dr John Hockings (formerly Head of School at QUT), as well as representation from Gold Coast City Council, the Office of Urban Management, Tweed Shire Council, and the Director for the Centre for Subtropical Design, Rosemary Kennedy. To give us a focus, we used Coolangatta as site.

We took a single basic proposition as the focus for the workshop. Research undertaken by the Centre for Subtropical Design had shown that the two key environmental values for the community of South East Queensland are openness and a relationship to landscape. We took these two values and explored how these values could be delivered at a range of densities, within a different organisational framework.

Our think tank yielded some interesting ideas:

- When masterplanning for new housing and other uses, the first focus should be on creating and linking landscape elements – parks, creek corridors – and treating streets as planted landscape elements. Our ideas for Coolangatta included creating landscape corridors linking park areas to the beach.
- When we are designing the transport to help us all be less reliant on cars, instead of just buying in the European or North American models, perhaps the transport itself needs to be subtropical in character. Plenty of stops (so you don't have to walk far in the heat!), and open, with big shady roofs powered perhaps by solar panels.
- When looking to create TOD in a given areas, do so in a way that makes sense for the subtropical climate. For example, why not locate apartment buildings adjacent to parks and creek corridors where a green, open outlook (and cross ventilation) can be achieved rather than on main roads? On site ensure there are deep soil areas within residential street frontages, along northern edges of lots and within courtyards of buildings so that big subtropical trees can be planted on site.
- At the city-wide level, instead of creating some areas of extremely high density, and everywhere else of very low density, create local neighbourhoods where detached houses sit next to duplexes and low scale apartment buildings, and everyone looks out onto green backyards in out direction and shady streets in the other.
- We need to create more subtropical streets and public spaces, that are shady, and simply oriented to funnel breezes. Our primary streets can be subtropical boulevards with multiple rows of trees.
- Apartment buildings can have thin plans to encourage cross ventilation and plenty of natural daylight. A good idea from the workshop was the idea of the verandah apartment; and apartment which is surrounded by verandah to create cross ventilation and light, and an apartment with an indoor-outdoor quality.
- Taller buildings should also have smaller floor plates to allow for cross ventilation and open outlook, and should be co-located with major landscape outlooks/resources. In taller buildings, major landscape and shade can be brought into the building, in courtyards, on podiums, and also within the building itself, in courtyards between floors. Gardens could be incorporated as part of the facades.

The sketches which illustrate these points give just a taste of what is possible to achieve in just two days – a set of ideas for a reconceptualized urban place.

Workshops like these need to be held around Australia to examine the issue of climate change and cities and to test a range of scenarios and possible outcomes for how we respond. This needs to take place not just in the rarefied environment of the design studio, but working with communities, in a comprehensive program of community design workshops – not public meetings, but working sessions around the design tables to develop strong design briefs around environmental values. From this base we would then be able to be inventive and creative about how our cities respond to Climate Change. Again as an example of how this can be done, in 2005 the Urban Design Alliance of Queensland ran a design workshop for over 100 practitioners and professionals around the issue of masterplanning in the CBD. The design ideas emerging from that workshop helped the subsequent authors of the CBD masterplan to develop strong design briefs for 12 key sites across the city. Design workshops of similar scales could be held within communities around Australia, as a means of generating strong design briefs for planning schemes and urban development.

Governments have skirted around the issue of how and where people live, and how that contributes to climate change, because the political impacts are potentially enormous. Designers constantly negotiate with clients and communities about their values regarding how and where they live, it's part of our professional 'suitcase' of skills. Designers are engaged in the business of creatively imagining places, and finding solutions to broad and complex issues. Good design and designers need to be used as key strategic tools in working through Climate Change impacts and implications in relation to cities, and this needs to be done at a national level.

Experimenting, researching new solutions for urban places should not be considered beyond our reach when the imperative is so strong. The Building Better Cities program set ambitious targets and had major impacts on inner city areas around Australia. Other cities such as Vancouver, Portland throughout the world have approached urban issues at this large scale. It is now time for us to develop our own approaches.

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