

THE HOUSE WITH NO PLANS LINSDAY JOHNSTON

“MOST OF THE DEVELOPMENT IN AUSTRALIA OVER THE 20TH CENTURY TOOK PLACE IN AN ERA WHEN ENERGY, LIKE OXYGEN, WATER AND SOIL ORGANIC MATTER, WAS TREATED AS A VIRTUALLY FREE RESOURCE FROM THE BIOSPHERE WHERE ONLY THE COSTS OF EXPLORATION AND EXTRACTION WERE PAID”
BARNEY FORAN AND FRANZI POLDY,
CSIRO, 2002

September 12, 2001 – the morning after the night before, as I rolled over and uncharacteristically switched on my solar-powered television to reveal the calamitous events that had occurred, my first words, in a state of shock, were **“this is about resources, not principles or beliefs!”**.

In my interview in 1999 with Ray Anderson, former co-chair of Clinton’s Council for Sustainability, he put forward the propositions: “the economy is the wholly owned subsidiary of the environment” and “the future is a design problem”.

The topic of heated debate at the Designing Futures Conference in Perth in 2002 was the audacious proposition that humankind now had the wherewithal to ‘design’ the natural environment. Bruce Mau challenged designers to rise to this opportunity – who else is going to? Marco Susani suggested that designers could envisage new lifestyles that would lead commerce in new directions. Anderson had cited the concept of ‘lobal change’ – moving rationalist convergent left-brain thinking to imaginative divergent creative thinking. My good friend Mike Mulholland from England, a speaker at the RAlA Convention in Cairns in 1997, encouraged architects and designers to shift away from their product focus – we design houses or offices or chairs or

door handles, all perceived by society as ‘styling’ – and promote the concept that they are purveyors of creative thinking and problem solving capabilities. What architect Jamie Lerner (now president of the International Union of Architects) delivered as Mayor of the innovative eco-urbanist town of Curitiba in Brazil, was creative architectural or design thinking – the ability to formulate, address and solve complicated ill-defined problems of the built environment in imaginative and effective ways. I remember Australian futurist Peter Ellyard speaking at the UIA Conference in Chicago in 1993 echoing Bruce Mau’s proactive ambition of creating a ‘Preferred Future’ – **“don’t just sit there and wait for it to happen; try to influence or ‘design’ the future.** Amory Lovins, who visited Australia recently and spoke at the opening of ‘60L’, the new home for the Australian Conservation Foundation in Carlton, is an environmental evangelist and agent for change, who has been at various times described as ‘one of the most influential individuals on the planet’.

I made a presentation a few years ago to Amory and Hunter Lovins and the staff at the Rocky Mountain Institute in Colorado on developments in sustainable building design in Australia. As an aside, I threw in a bit on the underpinnings of the then emerging ‘Education Policy’ of the RAlA (which I was then penning) and the ‘Integrated Problem Based Learning’ educational model that existed in the architecture school at Newcastle, NSW. Of all I had to say, this was the bit that caught Amory Lovins’ imagination. Lovins recognises that the downward trend in education towards a disintegrated modular information-based framework of little boxes of so-called knowledge that can be ‘pick and mixed’ to arrive at a degree, is no substitute for the holistic educational paradigm, still common in design disciplines, based on a studio system that espouses integrated problem solving. This education should give designers integrative problem solving capabilities that will position them well to take a leadership role in the future. What, then, of ‘Designing the Future’? **I have the recurring feeling that humankind is piling into the future like an amateur homebuilder enthusiastically constructing a house with no plans.** However, for Australia, a brief analysis has recently been

It is remarkable to get a vision of the future that goes beyond the dreams and is underpinned by a serious attempt to quantify the issues. It is even more remarkable that this vision has been the, perhaps unforeseen, result of an initiative by such a pinch-faced source as the Australian Department of Immigration and Multicultural and Indigenous Affairs. The study has been produced by CSIRO Sustainable Ecosystems, authored by Barney Foran and Franzl Poldy and is entitled Future Dilemmas – Options to 2050 for Australia’s Population, Technology, Resources and Environment. It puts up three alternative immigration scenarios out to 2050 with resultant population growth consequences and then endeavours to **scope the resource and other implications giving, for me anyway, a sobering insight into the considerable challenges, and opportunities, that lie ahead.**

This should give you something to nibble on over your cocktails. Here are some of its key points:

Under the three alternative population scenarios the number of people in Australia by 2050 could be 20, 25 or 32 million – it is about 18 million at present. Scenario one envisages zero immigration into the future, zero population growth and would see the population eventually decline to 16.7 million by 2100. This scenario is unlikely because immigration and population growth are primary drivers of the Australian economy – for example, think what would happen to the housing industry if immigration stopped.

There are two population growth scenarios. At the top end of the spectrum, is an increase of immigration to a figure of 0.67 percent of current population per annum – starting at 120,000 per year on present population levels and gradually increasing – resulting in the total population reaching 32.2 million by 2050 and over 50 million by 2100. A more likely scenario may be a 'business as usual' scenario, with immigration continuing at the present 70,000 persons per year (0.38 percent of current population levels) resulting in the population of Australia stabilising at around 25 million. The latter may seem all very 'fine', but in a world population scenario with the number of persons on Earth projected to climb from the current level of six billion to 9.3 billion by 2050 – an increase of over 60 percent – can Australia responsibly sustain a position that limits immigration and population growth?

So what are the implications of these population growth scenarios?

How about the population of Sydney growing by 2050 from about four million today to 5.2 million under the 'business as usual' scenario, or 6.8 million under the 0.67 percent scenario? Or Melbourne growing from 3.5 million to 4.3 or 5.8 million by 2050? Wow!!! And what are the implications of these growth statistics on land, energy, water, food, materials consumption? Does this not present a design problem of mega-proportions?

Under the two population growth scenarios, an additional 2.5 to 4.5 million houses would be required nationally by 2050, on top of the current 5.5 million, plus an additional 1.5 to three million flats and townhouses, on top of the current 1.5 million. Non-dwelling building space would need to be expanded by 2050 from 1.75 million square metres today to between three and four million square metres. The energy demand of all these buildings could rise from about 600 petajoules per year today to 900 or 1200 petajoules per year by 2050 – an increase of 150 – 200 percent. Think of the greenhouse gas implications of this little lot. To keep any kind of lid on this energy, and associated greenhouse gas emissions, it is suggested we need to cut energy consumption in buildings by half – this is no mean challenge!

To meet the demand of the two population growth scenarios additional land requirements would expand the footprint of our cities by 2050 from about 10,000 square kilometres at present to between 12,000 and 15,000 square kilometres. Where is this land? What are the implications on pressures such as the urban development and bushfire threat interface? What does this say to the debate about urban renewal and densification versus suburban sprawl?

Car numbers under the two population growth scenarios could rise from 10 million at present to between 14 and 17 million – think of the fuel consumption, emissions and infrastructure required to support this and the resultant traffic congestion nightmare (one traffic study suggests that the cost of traffic congestion to the national economy will be \$30 billion per year by 2015). An additional 3000 to 10,000 kilometres of roads would be required to add to the existing 320,000 kilometres of sealed roads (only 40 percent of Australia's road network is sealed). To try and limit the fuel consumption implications it is suggested that we need to get the present 10 litres/100 kilometres level down to six or even three litres/100 kilometres. It is projected that nitrous oxide and other emissions in major cities could rise to 150 – 200 percent of current levels. What does all this mean for future strategies for public transport?

While buildings and their occupants are only responsible for 14 percent of total national water use, the two population growth scenarios, under current patterns of demand, project an increase in water required for buildings from 2000 gigalitres per year at present to 3750 to 4500 gigalitres per year. In a country increasingly drought stricken, this is obviously a major problem and it is suggested that water consumption in buildings also needs to be reduced to at least half of current levels.

WE HAVEN'T FELT THE PAIN OF HUMANITY'S FUTURE LIKE AN AMATEUR HOMEBUILDER ENTHUSIASTIC CONSTRUCTING A HOUSE WITH NO PLANS.

RESOURCES

It is projected that domestic production of oil and gas will decline through to 2070 throwing the demand balance for these crucial resources from surplus at 2020 into deficit at 2050. On the other hand Australian production of black coal is projected to expand from 300 million tonnes today to 1.24 billion tonnes by 2050 – think of the greenhouse implications of this statistic. Australia is fortunate to be well endowed in other mineral resource commodities with the potential to export extensively. Australia is also fortunate that projections suggest that food production levels under all population scenarios are several times higher than required to feed the resident population – providing the weather, water shortages, soil degradation and salinity do not intervene.

CARBON EMISSIONS

Current total use of primary energy in Australia is 4800 petajoules per year. Under the two population growth scenarios this could increase to 7000 petajoules, for the 'business as usual' scenario, and 8300 petajoules per year, for the 0.67 percent per annum growth scenario. Various projections based on different variables indicate that CO2 emissions by 2050 for the two scenarios could be 215 – 260 percent of 1990 levels, or even as high as 300 percent of 1990 levels, whereas the Kyoto protocol, not signed by Australia (and now perhaps you can see why), required Australia to reduce its carbon emissions to 108 percent of 1990 levels by 2008-12. In 1998 we were already 21 percent above 1990 levels. The report postulates a suite of, what I call 'you wish', sub-scenarios which give Australia some chance of getting this situation under some kind of control. It suggests a high-tech scenario, which picks up on Amory Lovins' 'Factor Four' concept – halving resource consumption and doubling wealth – that would require us all to get energy use in buildings back to 50 percent of 'business as usual' levels, cut water use to 50 percent current levels and get energy use in vehicles similarly back to 50 percent through use of cars that can run 100 kilometres on three litres.

Australia only contributes one to two percent of global greenhouse gas emissions and, for this reason, we could disregard this issue and associated scientific indications of the impact upon climate change. The CSIRO report, however, emphasises that global climate change could have long-term and serious adverse impacts – through temperature change and rainfall patterns – on what Bruce Mau calls, 'Massive Change', that is before us? Are we really right-brain thinkers, outside the square, capable of lateral and divergent thought and new paradigms for action? Or are we locked up in a left-brain, product focused, paradigm of convergent thinking and naval gazing? Who is going to take responsibility for this momentous design problem – nay opportunity?

GOING TO DO?

Are we just going to continue to sip cocktails and pretend there is no problem? Are we going to remain product focused and concentrate on the detailed resolution of our buildings, products or artefacts? Are we going to wait and let the short lifecycle politicians and economic rationalists steer the market in its wisdom to the 'promised land'? Are we going to be part of the, what Bruce Mau calls, 'Massive Change', that is before us? Are we really right-brain thinkers, outside the square, capable of lateral and divergent thought and new paradigms for action? Or are we locked up in a left-brain, product focused, paradigm of convergent thinking and naval gazing? Who is going to take responsibility for this momentous design problem – nay opportunity?

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NAVIGATING?