

Still settling cities: sustainability, governance and change (Keynote Address)

Professor Steve Dovers¹

Fenner School of Environment and Society, Australian National University.

Unsettled cities

For many people, Australia was 'settled' soon after European occupation, through the actions of hardy, resourceful and sometime foolhardy 'settlers'. This process and these people then somehow departed the narrative of the evolution of people and continent. They faded first from Sydney, which went from 'settlement' to town and then to city, where settlers do not exist. Settlers hung on longer in the bush, but there too they faded away with sufficient permanence and rhythm of human occupation. Once the survey pegs are removed and houses built, settlement ceases. Occasionally other settlers popped up – 'new settlers' as another term for migrant 'new Australians' and later alternative lifestylers retreating the deviant, consumptive cities. But overall the modern era put paid to settling, and settlers, settlement and settling are now past tense in the public mind.

Three things are wrong here. First, human settlement of the Australian continent began well before white occupation, at least 50,000 years before, and Indigenous settlement is an unfinished story. Second, the presumption that the process of settlement has stopped. Third, the settlement story has mostly overlooked urban Australia – cities as post-settlement phenomena, devoid of settlers.

We are *still settling Australia*, and we are still settling cities and towns as much as the bush.²

Subdivisions are settlement, as is tree planting in country or city, densification through housing form, discovering something new about our soils and climate, putting in domestic water tanks, building power stations, fencing, and all the rest. Resurrecting the term 'settlement' repositions current debates in a long story of interaction between people and place, of learning and legacies, of deliberate and accidental change creating the future.

The process of human settlement imposes change on land and on people, and is impacted by other factors and drivers of change. We are not close to being settled in our relationship with the Australian continent, or fully capable of comprehending and handling the factors that influence us, which have not varied as much over time as many imagine – climate variability, resource availability and scarcity, our political institutions, demographic change, trade flows and shifts, and so on.

It took almost three decades to figure how to remove *Eucalyptus* stumps to allow cultivation, and we have been experimenting with the Australian environment ever since – still settling as we build, learn, progress, regress, plan and try to create better or at least tolerable human landscapes. From empirical evidence it is apparent that we have yet to figure out what comprises a human dwelling suited to the Australian meteorological and hydrological environment. Or that we know how to deliver such dwellings but are constrained from doing so. In a water-scarce land, we use massive quantities of high value, carefully treated water to shift faeces.

South Australia saw one of Australia's most celebrated cases of the span of settlement exceeding advised limits of climate, across Goyder's Line late in the 19th century (Meinig 1962), an unsettlement where people left the landscape. Such unsettlement is happening now as small communities wither at the end of stranded irrigation assets as water markets have their logical impact. In cities, those who cannot afford to live in the new urban environments that result from policy interventions are desettled, and others settle there instead. There are countless other stories of the trials and experiments of settlement, mostly from non-urban Australia.

¹ The author acknowledges colleagues who have fed his jack-of-all-trades knowledge of cities and climate. Some observations here arise from work funded by Land & Water Australia (our *de facto* sustainability R&D corporation) and through Australian Greenhouse Office via previous and current integrated assessment projects. The author retains inalienable rights to all incorrections and suspect opinions.

² The 'still settling' theme was previously used to link environmental history and policy in Dovers (2000), a venture in environmental history firmly focused on non-urban Australia not because of that being the more valid focus but because of a lack of urban environmental history research, a gap filled in recent years.

Cities rarely feature in the common story of Australian settlement, even though the urban population exceeded the rural from the mid 19th Century. Indeed, urban Australia in the story of white settlement has been mostly an aberration or apology. Recall AD Hope (1972) in the poem *Australia*:

And her five cities, like five teeming sores,
Each drains her: a vast parasite robber-state
Where second hand Europeans pullulate
Timidly of the edge of alien shores.

Whatever one's personal preference for the 'real Australia', whether city, suburb, town, paddock or bush, all are real and locked together. The city-country divide is a political and media artifice mostly, but it has its roots in the settlement story. Most constructions of heartlands – TV documentaries and research programs – place the heart in the country. In *Australian heartlands*, Brendan Gleeson (2006) provides a political, demographic and economic antidote and puts the heart in the suburbs. Are we Still Settling in the Suburbs? Bloody oath we are. Gleeson has placed our dominant form of human habitation – the suburb – in the context of the political, social and economic *pax* that usually gets the term 'The Australian Settlement'. I want to cast the idea of settlement broader in time and bring in the role of environmental change more. Anyway, the 'Australian settlement' has been deeply unsettled by neoliberalism and is in need of reinvigoration and recasting.

So let's clear this up, millennia on, Australians of all sorts are still settlers and are still settling the Australian landscape, that place that Eric Rolls (1994) had as 'more a new planet than a new continent'. Cities hide the raw biophysical difference of Australia more than little towns and farms; they mask the immediacy of environmental variables; and material and energy trades and flows camouflage locally unsustainable patterns of settlement. But we are still settling Australian urban landscapes in this peculiarly Australian settling.

The humanities talk of 'settler societies' – Australia, North America, South Africa – where 'settlement' has a colonial tinge and is recent (Griffiths and Robin 1997). Who are settlers – individuals, families, village-sized groups, nations? That's another problem with the settler myth, its individuality. Even back-then, white, hardy individual settler of mainstream Australian narrative were not so individualistic, but supported by public subsidy, early irrigation systems, government survey, national development agendas and land grants. Settling Australia has never been entirely individualistic, or just government-driven, or privatized, or community-organised, but a mixed bag. Such a mixed bag of rules, innovation, network and compromise nowadays gets called *governance*, supposedly a new thing but perhaps not. Governance has changed in form and intent, but not in basic logic, and changing our institutions is as much settling as physical acts of finding and building.

The challenges of settlement shift over time. Are the challenges of change and settling greater and quicker now, as many claim? That may well be wrong, and certainly a fruitless line of thought. In any relative sense, the pace and scale of changes in human settlement in the past was challenging – post-war urban growth, revising production and consumption in city and bush for wartime production, provision of universal access to clean water and schooling, the impact of the car and telephone, shifting global commodity markets, the advent of universal artificial light – were these somehow less relative to institutional and technological capacities than our agendas now? Probably not, and who cares anyway – each era has challenges and can deal with them intelligently and fairly or not.

Current and future changes are the topic here. What things will challenge our ongoing settlement of Australian cities? Change and cities equals a challenge in governance and today's challenges demand physical, intellectual and institutional responses, and a framework and vision within which to organize efforts. I suggest that what makes past challenges seem less is the fact that there was a greater consensus over where Australia wished to go. The comfort of consensus is missing now. I will suggest that sustainable development offers such a framework but that we have failed to comprehend it. I will now consider one big set of changes – climate change – which confronts the governance of cities.

Climate change and cities

It is difficult to gauge the magnitude of the imperatives of climate change at global, national and local scales. Here I will summarise the global picture, what climate change might mean for Australian cities, and touch on fine scale, realistic challenges that may confront a local urban manager.

On a global and evolutionary scale, human-induced climate change will likely spell a significant shift in our operating environment, toward what has been proposed as a new geological era – the Anthropocene – where human influence dominates the global biogeochemical system (Crutzen and Steffen 2003). Modern humans have evolved and built civilizations and settlements and complex systems of production, consumption and governance in a very recent, stable climatic period (Boyden 1987). We are untested in the face of significant shifts in that comfortable envelope. The most comprehensive scientific collaborative endeavour in human history, the Intergovernmental Panel on Climate Change (IPCC) and related processes, offers abundant and rigorous evidence that far outweighs that of the ever-diminishing set of critics (www.ipcc.ch; IPCC 2007).

At moderate levels of change, the *Stern Review* (Her Majesty's Treasury 2006) views the economic impacts as highly significant, and the costs of action as far lower than the costs of inaction. At the further, less certain end of predictions, scientists warn of metres of sea level rise destroying cities and even countries, unlivable runs of heatwave days, extinction of coral reefs and a large part of the planet's wild biodiversity, increased extreme weather-related disasters, worse droughts, failed agriculture, more vector-borne diseases, and so on. Some places may enjoy benefits of warming and increased precipitation, but the gains in most scientists' view will be small compared to the losses.

An important shift occurred in the wording of the IPCC's 4th assessment report. Scientifically conservative and wary of Type I errors, the IPCC will not state probability in quantitative terms, but now uses terms such as 'very high likelihood' that strongly imply a 95 or even 98% confidence limit. That high scientific burden of proof is well in excess of the burdens of proof commonly used in politics, the media, neoclassical economic models and even sometimes in courts of law (Cranor 1999; Dovers 2006). We send people to goal for criminal acts in cases of 'beyond reasonable doubt', and in civil law 'on the balance of probabilities', but dither over serious responses to climate change when the evidence is consistent with the higher of these burdens of proof.

If the worst predictions ensue, and the evidence has firmed that the impacts will be more rather than less, then an increase in what were once called 'acts of God' present particular challenges to cities. Natural disasters are best understood as events that impact through human vulnerability, whether that vulnerability is caused by people placing themselves or being forced to live in hazardous areas, through lack of planning and preparedness, or socio-economic or political powerlessness that reduces community resilience (Handmer and Dovers 2007). It is important to understand, in any given situation, the ways in which vulnerability to climate impacts has been constructed in the past, the durability of such built-in vulnerability, and the ways in which current and future planning and development decisions may be constructing or embedding vulnerability.

If disaster events increase in frequency and severity, Australian cities may for the first time become really vulnerable. I put it to you that only once in recent times has a disaster event affected a sufficient proportion of an Australian city to become a significant political event – the Canberra fires of 2003.³ Four years on the political heat, loss of trust in public institutions and residual anger in the community persist. Cities are vulnerable in their form, lack of whole-of-community volunteer emergency services, reliance on large-scale fixed infrastructure, and size and complexity. Expect a combustible mix of community anger, media shamelessness and political populism should a relatively similar event strike another major city. Consider the political fall-out following recent fires in Greece and the failure of the state around Hurricane Katrina. Keep a watching brief on the ever-increasing, fire prone rural-urban interface around some Australian cities, and vulnerable urban areas in a more cyclone and storm surge-prone southern Queensland. Such scenarios bring into question the resilience of people, assets and local economies, but also that of public institutions.

But we should be wary of focusing only on big, scary disasters. Climate change is likely to expose the vulnerability of cities and people in many, less spectacular ways. Employment, consumer behaviours, sub-chronic health conditions, water and energy systems – all may be impacted on directly by climate events and trends, or indirectly through shifts in trade or policy in other countries in response to climate change. Vigorous emission standards in key import-destination countries, for example, may challenge an unprepared Australia. As a problem with systemic causes and effects throughout modern economies, the impacts of climate change will permeate society.

³ Cyclone Tracy, Darwin 1974, destroyed a territory capital, but I would argue that times were different and the political implications much less in terms of political trust and community attitude.

Whatever the scale of impact, not everyone is similarly vulnerable. In assessing the impacts of climate change on urban settlements, we have a major task ahead to map and understand *differential vulnerability* to various climate impacts, and the determinants of vulnerability whether they be demographic, spatial, socio-economic, work-related, or lack of response capacity. Mixing that understanding with a good historical perspective on past urban development and planning might mean that we can avoid manufacturing vulnerability in future. In the face of such scenarios, perhaps it is good to be a people, as Australians were described in other lines in Hope's *Australia*

Whose boast is not: "we live" but "we survive"
A type who will inhabit the dying earth.

The earth will not die, but it could be in for rough times. What makes climate change a genuinely difficult issue is that its causes – mainly emissions from fossil fuels – are rooted deep in modern systems of production and consumption, settlement and governance. There are no singular responses or quick technological or behavioural changes. A meaningful response to climate change – atmospheric stabilization requires 60% cuts in greenhouse emissions – equals reformed housing, energy and transport systems, infrastructure, function and forms of urban systems, human behaviours and economic planning. Climate change is a *systemic* problem for research and policy.

That summary picture of climate change presents important imperatives for research and policy, but says little about the actual challenges facing particular settlements, parts thereof, or the people tasked with understanding, planning and managing aspects of urban systems.

Making climate change local

It is of little utility to a planner, developer, building surveyor or local government engineer to be told that average temperatures may rise by 2 degrees over coming decades, or that there is a strong likelihood of increased average rainfall. While finer scale climate change predictions are improving, the uncertainties are still significant and the resolution still coarse.

Better to translate predictions into event scenarios that convey possible operational challenges, and to relate these to local conditions. The predictions for Darwin of average temperature increases of 0.2-2.2° by 2030 and 0.8-5.6° by 2070 are difficult to translate into tractable challenges for health, infrastructure, building codes or energy management (Hennessy et al 2004). Extremes are more interesting, so the predictions of runs of 3-5 days over 35° per year from the present 0.7 to 1-10 in 2030 and 4-98 in 2070 are more meaningful, especially if stated as "what is vulnerable if we shift from the typical single hot day to multiple runs of hot days?" This can be repeated across settlements and impacts, and is the topic of a number of integrated assessment exercises at present. We have a fair way to go in this place-by-place and impact-by-impact translation, and in connecting such assessments at larger scale, but the science is there to do much more than we currently do, although we are advancing more slowly on our understanding of differential vulnerability of people, assets and places. More crucially, we have some way to go to have a climate adaptation capacity that connects across spatial and jurisdictional scales – local integrated assessment is important and must include local agencies and people, but must be connected by resources and communication flows and by allocation of responsibilities across tiers of government and public, private and community sectors.

While this approach makes climate change more tractable at a practical urban planning and management level, the uncertainties are still large. Scientists find uncertainty fascinating: local managers find it frustrating. How do we judge the merits of preparing for or avoiding a future uncertain impact against more immediate demands on resources? In early climate change debates in Australia, the idea of 'no-regrets options' was popular – if the social and economic impacts of a strategy were at least neutral or slightly positive, then precautionary action could be justified. The no-regrets idea has faded somewhat in Australian policy. With the prospect of large scale impacts occurring as disasters, the importance of redundancy, fail-safe and spare capacity emerge, but are difficult to justify in an age of efficiency, downsizing and optimization (Handmer and Dovers 2007).

Consider an example of local impact of the kind that emerges in structured discussions between researchers and management agencies.⁴ In one town in New South Wales, as drought and water restrictions bit, residents responded to the loss of lawn by covering ground with crushed weathered granite (red tennis court gravel). In the next storm, this material shifts into stormwater drains,

⁴ This is an as-yet unexplored issue emerging from the IACCIUS project reported on by Teakle 2007.

blocking them and requiring labour-intensive removal. More extended droughts and increased storm intensity are consistent with predictions of, but not necessarily caused by, climate change. Compared to cyclone disasters, virus-borne disease epidemics and high-mortality heatwaves, gravel in stormwater system seems trivial. But to a resource-strapped council loaded with devolved responsibilities and a rate cap, committing to the clean up task is not trivial. The possible consequences of reduced stormwater capacity in subsequent storms may be a serious local flood risk, and more so in urban areas with increased impervious surfaces due to densification. Do we regulate domestic landscaping, educate people, tax the material, and how is the policy justified, communicated, resourced and enforced by a local authority?

This little example leads to a larger point. Climate change is, in and of itself, uninteresting except for the meteorological determinists and climate fixated. Climate change is only interesting when considered in interaction with other factors and drivers of change, be these environmental, social or economic. In fact climate change is only really interesting, when thinking of the long-run sustainability of cities, in how it interacts with multiple other drivers of change. In the gravel case, climate change or at least variability interacts with trends in the landscape industry, regional availability of low-cost extractive material, the messages purveyed in the endless TV blitz of home improvement shows, the financial and regulatory capacities of local government, urban development and densification in a high-growth town, and possibly – although this remains to be investigated beyond the anecdotal – socio-cultural differences among modern day urban settlers in their yard improvement tastes.

Consider current debates around water and energy options in the context of climate change (Proust et al 2007). Policy discussions of water scarcity and supply take place largely in the absence of consideration of very different energy implications. We consider singular or simplistic pair-wise energy options without comparison across the portfolio of options, and without proper consideration of the water demands of each. Discussions of both take place with inadequate analysis of the resilience or vulnerability of water and energy systems in the face of increased climate variability. Massive desalination plants answer a water supply panic in a costly and inflexible way, but are energy expensive. Abstemious drip irrigation systems require pumping energy and extra embedded energy in materials compared to water-wasteful but energy-cheap gravity flood irrigation systems.

Getting back to the broader scale, we can now consider what some of these other drivers are that will interact with climate change, and that in fact may well be more important.⁵

Other drivers and factors

Here I will present a summary, incomplete list of factors, trends and drivers of change that will interact with climate change. Climate change is a systemic problem whose causes, effects and response implications are associated with multiple policy and economic sectors, so the list could be longer.

- Demographic change, nationally and locally, will drive shifts in production and consumption that determine both the causes and the impacts of climate change. Demographic character and change will also define differential vulnerability to specific impacts.
- Other environmental issues, such as the balance between native and plantation forestry and their viability under new conditions, changing water demands and water policy frameworks and how these interface with increased variability, or community expectations for biodiversity conservation as vulnerable remnant habitats are placed under further stress.
- National security and its interaction with emergency management capacities, and the risk of an unhealthy 'securitisation' of climate and urban policy debates (Wekerle and Jackson 2005; Barnett and Adger 2007).
- Consumption patterns and preferences, influencing multiple resource demands and waste flows that are implicated in both the causes and impacts of climate change.
- Capacities and changing styles and emphases in public administration, policy systems and political processes – marketisation, optimization, efficiency, populism, shifts of power to the Executive, etc – with respect to abilities to construct integrated policy over the long term in the face of uncertainty. The trends in planning regimes are especially relevant.

⁵ *Caveat emptor*: the author is cantering over areas where he cannot claim expertise. Never mind the quality, feel the width.

- Trends and capacities in infrastructure renewal, investment and management, including the scope of possible infrastructure reform, and who designs, funds, owns and manages it.
- Shifts in interpretation of legal liabilities for and insurance coverage of acts and assets, and related societal attitudes to risk aversion.
- Trade shifts in multiple sectors, including raw commodities but also manufactures, tourism, services, information, impacting both the inputs and outputs of the Australian economy.
- Energy supply and demand as driven by factors other than climate change mitigation policy, given energy's crucial role in modern economies and cities, and its key role in determining environmental impact (eg. Dodson and Sipe 2007; Holloway and Bunker 2006).
- Economic growth, given that water and energy use – both closely relevant to climate change – have been closely correlated to GDP growth for many decades (Proust et al 2007), and the technical possibilities for decoupling economic growth from physical throughput.

This could be constructed differently (eg. Randolph 2004) and begs detail, but the point is that the shape of cities, and the impact of climate change, will be defined by complex interactions between these and other factors. What offers a way of getting these multiple issues firstly on the one agenda, and secondly offers a framework within which they can be incorporated in research and policy?

Sustainability: integrating multiple drivers?

Twenty years on from the landmark *Our common future* (WCED 1987), the concept of sustainable development – with the useful prefix 'ecologically' in the Australian term ESD – has failed to deliver an integrative agenda, despite the policy commitments of countless governments and non-government bodies in the fifteen years since the Rio Earth Summit in 1992 (UN 1992; Commonwealth of Australia 1992). Integration of environmental, social and economic policy in the long term, dual consideration of inter- and intra-generational equity, a precautionary approach and a high value placed upon biodiversity and ecological life support systems – these and other sustainability principles are at once universally endorsed and unachieved (eg. Dovers 2002).

In particular, the idea of sustainable development invites proper attention to the interacting drivers of change, and demands integration across the domains of environment, society and economy. There is no other candidate for an overarching policy and research agenda. Yet many have become tired of the sustainability idea – too vague, contestable, unachievable, not operational, haven't got there yet, and so on. Yet if we accept sustainable development as a higher order social goal then instant gratification is unlikely, but rather a multi-generational process of changing understanding and institutions (Connor and Dovers 2004). Other higher order goals have been around longer and are contested – democracy, equity, the rule of law – but are still considered worth pursuing.

Implementing sustainable development in a whole-of-government and –society sense is a big topic and here I will consider one crucial implementation deficit – the necessary institutional settings and planning and policy processes. While advance has been made in some parts of sustainable development implementation, we struggle to put the bits together. There are two aspects: what these policy and institutional settings might be; and, what knowledge would need to underpin policy.

Policy and institutional challenges

Climate change and sustainable development are inevitably whole-of-government and whole-of-society problems – they disrespect the spatial, sectoral and jurisdictional boundaries that vertically and horizontally divide institutions. So too are cities, as they represent interlocked systems requiring integration of environment, equity, infrastructure, services, health, housing, and so on, all connected to broader hinterlands and economic and social systems. Many individual sustainability problems, and urban issues, arise from lack of connection between policy and decision making that has traditionally taken place in isolated sectors with separated responsibilities. While many public administration and policy mechanisms exist for vertical and horizontal integration – Cabinet, interdepartmental committees, task forces, special inquiries and the like – it is widely considered that *policy integration* for sustainability demands significantly more coherent structures and processes (eg. Lenschow 2002; Lafferty 2004; Jacob and Volkery 2004; Ross 2005).

To prompt thought about what kinds of structures and processes – both extant and proposed – might be prime candidates to further policy integration, we can consider a list of selected mechanisms:

- A comprehensive, *integrated policy platform* on sustainable development, coordinating sectoral policy and translating the general avowal of intent into policy principles and an implementation plan, with sufficient resources and ongoing evaluation. Australia's National Strategy for ESD (Commonwealth 1992) was an abandoned start.
- Mechanisms to ensure *consideration of longer term ecological and social issues* in policy making, including specification of long term information needs, guarantee of persistence of efforts, and provisions for reiteration and review – antidotes to short term policy cycles.
- *Policy integration mechanisms* to incorporate sustainability principles in all policy sectors. In structural terms, cross-portfolio coordination via a commissioner or office of sustainability is a minimum, ideally in the first minister's department or reporting to parliament, such as exist in some Australian jurisdictions and used to exist in others. A prime operational mechanism is strategic environmental assessment (SEA), provision for which in Australia is as long-standing as it is unused (Marsden and Dovers 2002; Marsden and Ashe 2006).
- Review and reform of the wider body of *statute law*, to embed sustainability principles in the objects and processes of agencies and policy processes, through a wide-ranging legislative review and firm statutory expression (compare National Competition Policy legislative review process). Expression of ESD principles in +120 Australian statutes is a start, but largely discretionary and lacking implementation guidance.
- In a federal system, renegotiation and reform of *intergovernmental policy and statutory arrangements* to enable coordinated responses to sustainability problems, including transfer of responsibilities and resources to the most suitable scale (subsidiarity). Such mechanisms would need to be the product of sophisticated analysis, negotiation and design rather than the current populist initiatives and buck-passing that characterizes Australian federalism.
- *Inclusion of the broader community* in policy formulation rather than only in delivery of programs. In cases of devolved governance, this requires ongoing capacity and support, and the transfer, where appropriate, of legal competence and decision-making power. In particular, regional scale initiatives should be either strengthened and empowered, or abandoned (eg. Robins and Dovers 2007), and an inclusive, higher-level body with defined roles (ie. a National Council for ESD) established.
- Strategic planning regimes underpinned by sustainable development – a topic revisited later.

Running through this list are strong regulatory themes, inclusive policy formulation processes and network approaches across governments, private and community sectors – in a word, a mixed governance approach. This is consistent with trends in thinking about contemporary policy, and with what is widely considered suitable to sustainability (eg. Hajer and Wagenaar 2003). Would such mechanisms work? Given good implementation and persistence they may help a lot. But at least the existence of such mechanisms would equal a 'credible commitment', in institutional terms, to the integrative concept of sustainability (credibility as per Connor and Dovers 2004, drawing on North 1993). Currently, such a credible commitment is not apparent.

If we consider policy mechanisms for integration of environmental, social and economic imperatives, then there is an elephant in the corner – *planning, and especially strategic regional planning* – a topic central to cities. Planning regimes should be one of – if not the – prime means whereby we negotiate, assess and integrate, producing settlements that cater for the long term, human needs, economic viability and livable environments. Planning as the governance of still settling. Working in local government in the first years of the EP&A Act regime in NSW, I recall the strong, optimistic vision of comprehensive, integrated multi-scale planning. That has been replaced by frustration, cynicism and disappointment, with good cause. (Note: the topic is planning regimes, not planners themselves, and I acknowledge that comprehensive planning is not an easy task.)

While Australian cities are livable by international standards, we still see panicked responses to long term problems – rushed silver bullet water supply options, running-to-catch-up transport provision, unstable density policy, service and retail centres established at odds with each other, inadequate and variable developer contribution schemes, and so on. We have an unsettled relationship between state and local government, and a Commonwealth seriously uninterested in cities.

I venture that strategic planning has failed to deliver sustainable development and sustainable cities, some better examples notwithstanding. There are multiple causes for this – poor regime design, lack of resourcing, information gaps, weak implementation, inadequate cross-scale and cross-sector coordination, and all too frequent political interference. The chances of coping with climate change – and other challenges – and of producing the best possible cities are lessened by this failure of strategic planning. A major recommendation from the 2006 National Sea Change Conference was for the realization of the potential of strategic regional planning (Lazarow et al 2006), and there are arguments that such potential can be resurrected (Gleeson et al 2004). Good planning regimes are like New Year resolutions: easy to promise; hard to keep.

I will leave that proposition for people to reject, accept or argue, and acknowledge that it is made at a broad brush level. I will now turn to the second question – whether we have reliable, integrated knowledge to inform sound city policy and planning in the face of climate change and other factors.

Research gaps

There is much good and necessary research being undertaken on Australian cities, and this conference series attests to that. But there are also gaps, some specific and I believe a very large one. Some examples of the specific. There is much we do not yet know on the flows and use across scales in cities of the basic currency of the biosphere – energy – yet policy and planning proceeds to make claims and decisions without proper understanding (eg. Holloway and Bunker 2006). It is only recently that proper attention has been paid to fine scale water demand and consumption in some Australian cities (eg. Troy and Randolph 2006), and much work remains to be done. Socio-cultural attitudes and aspirations regarding urban Australia are little known. The list could go on.

More concerning is a lack of a coherent, robust, accessible and reasonably widely accepted framework for analysis of cities as total systems, to inform integrated policy and planning, and to capture and communicate insights from place to place. Moreover, there is a lack of even comparable single city studies. Many of the bits are there, in discipline, problem, place and sector-specific work, but we need to put the bits together. Why should policy and planning to an integrated job without integrated understanding? Three decades after the first attempts at whole-city metabolic analyses incorporating more than physical data (Boyden et al 1981), we still lack in this area. Searching for total city sustainability work in four decades of the key journal *Urban Studies* is not a rewarding task (see Paddison 2004). Urban studies has not engaged with the total sustainable development agenda and conversely key interdisciplines that revolve around sustainability – human ecology, ecological economics, environmental history – have not engaged well with cities.

To do so would not rely only on soulless material, energy and economic flows analysis, but would need to incorporate strong historical, political and cultural perspectives (eg. Davison 2006). This requires productive connection between qualitative and quantitative approaches, and between disparate disciplines, however we do have good guidance on these two challenges (eg. respectively, Maginn 2006; Barnett et al 2003). A new synthesis of knowledge is needed to underpin such an integrated policy response and in particular long term planning. There are those who think that, despite the intellectually squalid public policy of recent times, Australia can show the way. Maybe there is, in AD Hope's words again

... some spirit which escapes
The learned doubt, the chatter of cultured apes
Which is called civilization over there.

Does Australia have a spirit of fresh insight untainted by too long a settled past? A reinvigoration of urban studies is needed, to see the city for the houses, reconcile differences in scope and methods, learn from the world but be relevantly Australian. An urban studies which does not draw a boundary where the suburbs end, or forget the suburbs at the expense of the CBD, does not partition the city into themes or sectors or disciplines, and explores production and consumption interdependencies in a complex city. Not just economic and physical, but social, political and cultural. An urban studies that can give policy makers an inescapable understanding of the total city system, and especially of the long-run consequences of decisions across portfolios, policy sectors, places and time.

This suggests a national R&D program involving a meta-framework populated with linked studies to comprehend the complexity of cities-as-systems.⁶ It would be continental in scope, inclusive of policy, research and community, flexible enough to accommodate disparate methods and regional variations, but robust enough to force attention on interacting drivers of change over the long term, with the following key attributes:

- Linked large scale studies of major Australian human settlements, nested within a common yet flexible methodological framework and set of data protocols,
- A common methodological framework would likely need to be a qualitative dynamical systems model capable of incorporating multiple component models detail in specific sectors, assets and flows, and of incorporating qualitative and qualitative information.
- The incorporation of multiple drivers of change, and their potential synergistic effects on urban form, structure, key materials and energy flows, infrastructure demand, economic conditions and livability. This would not define a small number of 'complete' scenarios – a weakness of much future-oriented work – but rather to explore the implications of interactions between different characteristics of cities and multiple drivers of change.
- Structured sustainability assessment (cf. Gibson et al 2005; Dovers 2006) of the implications of different configurations of interacting drivers, to enable defensible and timely identification of future policy challenges.
- An inclusive research design, engaging with a wide range of policy and management agencies and city communities, through traditional and recent deliberative methods.
- A strong training and capacity building, via a focus on early career researchers and seconded professionals, support for postgraduate students, and development of open access educational and training modules for professionals and undergraduates.

Such a program would require but also build institutional capacity. National coordination and resources would be required, and a coordinated web of researchers – the network that organizes these conferences provides that. It would need cooperation between research groups, the support and commitment of governments of all colours and sizes and of major professional and commercial interests. In short, it would be very difficult, but that should not be an excuse not to try.

What would such a large, coordinated national R&D program give us? For a start, the many projects and capacities that currently exist could be connected rather than remain separate. It would enhance understanding of cities as total systems, consistent with the sustainable development idea, forewarning of coming policy challenges. It would produce better coordination and mutual comprehension within and across the public, private, professional and community spheres, and develop human capacity. Individual cities would be better informed to face a complex and uncertain future. Scattered urban studies groups would connect and be empowered, but still productively diverse and feisty. It would be a credible commitment to sustainability. It would not make policy but would make bad policy and planning harder to defend.

Integrated assessment of climate change impacts is only recent and only beginning to engage with cities, and programs and projects are scarcely coordinated.⁷ However, there is a lack of common methodological frameworks, weak inclusion of long-run drivers and change and a concentration on selected impacts and sectors. Furthermore, integrated assessment approaches currently begin with a set of climate variables and bring these to bear on urban systems, rather than beginning with an understanding of urban systems (Teakle 2007). I am proposing integrated assessment writ large, nationally coordinated, and including but extending well beyond the issue of climate change. It is an ambitious proposal and would need a decade to construct and implement and would cost hundreds of millions. But if the future of managing water in a variable climate across the Murray Darling Basin is worth a \$10 billion ten year plan on top of decades of other efforts and an impressive National Water Initiative, then what price the long run sustainability of the cities that house the vast bulk of our people, our economic activity, our assets, and our national aspirations? If rural industries are worth a dozen R&D corporations serving national strategic knowledge needs, why not urban Australia?

⁶ This draws on a proposal developed by a group from The Australian National University, Murdoch University and Charles Darwin University. Particular acknowledgement is paid to Satis Arnold.

⁷ Programs run by the Australian Greenhouse Office are playing a significant role in driving such attention.

Inconclusive comment

If we are still settling our cities, then a broad discussion of the situation and the policy and research gaps cannot be finished with a concluding comment, but only an inconclusion. Whether or not the impacts of climate change challenge unsettle the governance of our cities to a greater or lesser degree, the demands on knowledge and policy capacities to support governance of more sustainable cities will doubtless become sharper. Climate change is likely to exacerbate these challenges, and it may impose shocks on human settlements that we are incapable of withstanding.

Our cities are livable and work well for many purposes, but in many ways are not sustainable environmentally, socially or economically. Planning regimes – not *planners*, I stress – have failed to integrate the multiple drivers of change, because of flaws in the regimes, rampant interference and weakening, lack of knowledge and the sheer difficulty of governing complex cities. Research has yet to deliver an accessible, detailed yet integrated understanding of the total city, for a number of reasons – a lack of encouragement and human resources, because integrative understanding is not in the interest of some actors, and again the sheer difficulty of integrative, applied scholarship.

At the very least we can do two things. First, comprehensive planning regimes underpinned by a proper rather than discretionary commitment to sustainable development – in its social, environment and economic dimensions – must exist and be implemented. Such planning regimes would be a prime manifestation of credible whole-of-government structures and processes aimed at implementing sustainable development, and coping with climate shifts and other drivers in the long term. Second, knowledge about our cities must be competent in a specialist sense but also integrated via future-oriented, multiple-sector and multiple-driver analyses, so that can see the city for the houses. Those two things will demand much of us as we still settle our cities in the face of a strange and variable climate. Which is what Australian settlers have always had to do.

References

- Barnett, J and Adger, N (2007) Climate change, human security and violent conflict, *Political Geography*, 26, pp. 639-655.
- Barnett, J, Ellemor, H and Dovers, S (2003) Sustainability and interdisciplinarity, in Dovers, S, Stern DI and Young, MD (eds) in *New dimensions in ecological economics* (Cheltenham: Edward Elgar).
- Boyden, S (1987) *Western civilization in biological perspective: patterns in biohistory* (Oxford: Clarendon Press).
- Boyden, S, Millar, S, Newcombe, S and O'Neill, B (1981) *The ecology of a city and its people: the case of Hong Kong* (Canberra, ANU Press).
- Commonwealth of Australia (1992) *National strategy for ecologically sustainable development* (Cberra: AGPS).
- Connor, R and Dovers, S (2004) *Institutional change for sustainable development* (Cheltenham: Edward Elgar).
- Cranor, CF (1999) Asymmetric information, the precautionary principle, and burdens of proof, in Raffensperger C and Tickner J (eds) *Protecting public health and the environment: implementing the precautionary principle*, (Washington DC, Island Press).
- Crutzen, PJ and Steffen, W (2003) How long have we been in the Athropocene era? *Climatic Change* 61, pp. 251-257.
- Davison, A (2006) Stuck in a cul-de-sac? Suburban history and urban sustainability in Australia, *Urban Policy and Research*, 24, pp. 201-216.
- Dodson, J and Sipe, N (2007) Oil vulnerability in the Australian city: assessing socioeconomic risks from higher urban fuel prices, *Urban Studies*, 44, pp. 37-62.
- Dovers, S (ed) (2000) *Environmental history and policy: still settling Australia* (Melbourne: Oxford University Press).
- Dovers, S (2002) Sustainability: reviewing Australia's progress, 1992-2002, *International Journal of Environmental Studies*, 59, pp. 559-571.
- Dovers, S. (2005) *Environment and sustainability policy: creation, implementation, evaluation* (Sydney: The Federation Press).
- Dovers, S (2006) Precautionary policy assessment for sustainability, in Fisher, E, Jones, J. and von Schomberg, R (eds) *The precautionary principle and public policy decision making* (Cheltenham, Edward Elgar).

- Gibson, RB, Hassan, S, Holtz, S, Tansey, J and Whitelaw, G (2005) *Sustainability assessment: criteria, processes and applications* (London: Earthscan).
- Gleeson, B (2006) *Australian heartlands: making space for hope in the suburbs* (Sydney, Allen and Unwin).
- Gleeson, B, Darbas, T and Lawson, S (2004) Governance, sustainability and recent Australian metropolitan strategies: a socio-theoretical analysis, *Urban Policy and Research*, 22, pp. 345-366.
- Griffiths, T and Robin, L (1997) *Ecology and empire: environmental history of settler societies* (Melbourne, Melbourne University Press).
- Hajer, M. and Wagenaar, H (eds) *Deliberative policy analysis: understanding governance in the network society* (Cambridge, Cambridge University Press).
- Handmer, J and Dovers, S (2007) *The handbook of disaster and emergency policy and institutions* (London: Earthscan).
- Hennessy, K, Page, C, McInnes, K, Walsh, K, Pittock, B, Bathols, J and Suppiah, R (2004) Climate change in the Northern Territory: consultancy report for the Northern Territory Department of Infrastructure, Planning and Environment (Melbourne, CSIRO).
- Her Majesty's Treasury (2006) Stern Review: the economics of climate change (London: Her Majesty's Treasury) www.hm-treasury.gov.uk/media/4/3/executive_summary.pdf.
- Holloway, D and Bunker, R (2006) Planning, housing and energy use: a review, *Urban Policy and Research*, 24, pp. 115-126.
- Hope, AD (1972) *Collected poems 1930-1970* (Sydney: Angus and Robertson).
- IPCC (Intergovernmental Panel on Climate Change) (2007) *Climate change 2007. Working Group II contribution to the IPCC fourth assessment report: summary for policymakers* (Geneva: IPCC).
- Jacob, K and Volkery, A (2004) Institutions and instruments for government self-regulation: environmental policy integration in a cross-country perspective, *Journal of Comparative Policy Analysis*, 6, pp. 291-309.
- Lafferty, WM (ed) (2002) *Governance for sustainable development: the challenge of adapting form to function* (Cheltenham: Edward Elgar).
- Lazarow, N., Souter, R, Fearon, R and Dovers, S (2006) *Coastal management in Australia: key institutional and governance issues for coastal natural resource planning* (Brisbane, CRC Coastal, Sea Change Taskforce and ANU).
- Lenschow, A (ed) (2002) *Environmental Policy Integration: Greening Sectoral Policies in Europe* (London: Earthscan).
- Maginn, PJ (2006) Urban policy analysis through a qualitative lens: overview to special issue, *Urban Policy and Research*, 24, pp. 1-15.
- Marsden, S and Ashe, J (2006) Strategic environmental assessment legislation in Australian states and territories, *Australasian Journal of Environmental Management*, 13: pp. 205-215.
- Marsden, S and Dovers, S (eds) (2002) *Strategic environmental assessment in Australasia* (Sydney: Federation Press).
- Meinig, DW (1962) *On the margins of good earth: the South Australian wheat frontier, 1869-1884* (Adelaide: Rigby).
- North, DC (1993) Institutions and credible commitment, *Journal of Theoretical and Institutional Economics*, 149(1), pp. 11-28.
- Paddison, A (2004) 40 year cumulative index, *Urban Studies*, 41, pp. 1-155.
- Proust, K, Dovers, S, Foran, B, Newell, B, Steffen, W and Troy, P (2007) *Climate, energy and water: accounting for the links* (Canberra: Land & Water Australia).
- Randolph, B (2004) The changing Australian city: new patterns, new policies and new research needs, *Urban Policy and Research*, 22, pp. 481-493.
- Robins, L and Dovers, S (2007) Community-based NRM Boards of management: Are they up to the task? *Australasian Journal of Environmental Management*, 14, pp. 111-122.
- Rolls, E (1994) More a new planet than a new continent, in Dovers, S (ed) *Australian environmental history: essays and cases* (Melbourne, Oxford University Press).
- Ross, A (2005) National institutions for sustainable development: the challenge of long-term policy integration, *Australasian Journal of Natural Resources Law and Policy*, 10, pp. 109-138.
- Teakle, G (2007) Approaching integrated assessment of climate change impacts on urban settlements, 3rd State of Australian Cities Conference, Adelaide, 28-30 November.

United Nations (1992) *Agenda 21* (New York: UN).

Wekerle, GR and Jackson, SB (2005) Urbanizing the security agenda, *City*, 9, pp. 33-49.

WCED (World Commission on Environment and Development) (1987) *Our common future* (Oxford: Oxford University Press).