Part 1

General Introduction

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A place is always what it was,
No matter how much we try to remake it.
The imagination can always go to first things.
Seeds from the Port Jackson fig, clematis, boronias,
And a hibiscus, stand in for seeds from all over the world.
And a necklace of shells in memory of the peninsula's lost beaches.
But these things can yet bloom in Pyrmont.
Visions of the past fire commitment to the present.
How will the new Pyrmont park by planted?
Will the selection of plants relate to the place and its ancient roots?
Deliver the past to a richer present.

Shirley Fitzgerald
(*in* Devenport, 2004)

This report describes the transformations of Pyrmont peninsula and their ecological consequences since European settlement of Australia in 1788. A useful definition of the word 'transformation' is:

> *'In an organizational context, a process of profound and radical change that orients an organization in a new direction and takes it to an entirely different level of effectiveness. Unlike 'turnaround'(which implies incremental progress on the same plane) transformation implies a basic change of character and little or no resemblance with the past configuration or structure'*(BusinessDictionary.com*)*

Human sociocultures have, for the most part, evolved incrementally. Their trajectory through time has been interspersed with events of a transformational nature –the shift from hunter-gathering to agriculture, the formation of cities, the advent of industrialisation. Transformations have typically been anthropocentric – intended to improve the wellbeing of humans.

It may be that transformational events have become more frequent in recent times, as we have become increasingly competent managers of our affairs and destiny. We are on the cusp of the most transformational event yet experienced - as we adjust, on a global scale, to the requirements of environmental and ecological sustainability.

For the first time in human history, humanity as a whole, faces a future which will be both anthropocentric and ecocentric. The centuries and millennia of neglect of ecology in favour of economy, are now catching up with us. Unless we engage in a change process of huge complexity and scale, ecology will move on without us - or our planet will again become lifeless.

Events on Pyrmont peninsula since 1788 have been a microcosm of these global processes. Remarkably, in a little over two centuries, the European inhabitants of the peninsula have made transformations which took humanity as a whole perhaps 10,000 years to realise. These transformations were from a natural place, inhabited by traditional hunter-gatherers, through agriculture, urbanisation, industrialisation in its manifold expressions, international networking through shipping, to the emergence of a globally-networked contemporary form of urbanism. Such transformations were all perceived as being of benefit to society at that time. Their ecological cost, however, was unrecognised or seen as inevitable collateral.

1.1   Prolegomenon

It was first intended to determine the ecology of Pyrmont peninsula at European settlement, in 1788, and again 220 years later, in 2008. The aim was to provide insights for rehabilitation projects within the present sociocultural context.

It was then decided to include a 'Transformations' section, in which the major changes in land use on the peninsula since European settlement were documented, with their ecological consequences. This part of the study made clear the need for radical change in the sociocultural status quo, which greatly devalues ecology in favour of economy. This realisation led to supplementation of previous project goals with a third and, in some ways, more urgent task. The rapid urbanisation of human populations on this planet is causing the systemic cultural loss of ecological knowledge. This loss is leading to acceptance of a drastic decline in planetary ecological resources, to the imperilment of human futures.

This general introduction outlines some considerations in this world view.

1.2   Environmental and ecological sustainability

It is essential at the outset to clearly differentiate environmental sustainability from ecological sustainability:

- The Commissioner for Environmental Sustainability, Victoria(2006) defined Environmental Sustainability as: ' … the ability to maintain the qualities that are valued in the physical environment. 'For example, most people want to sustain(maintain):

  - human life

  - the capabilities that the natural environment has to maintain the living conditions for people and other species(e.g. clean water and air, a suitable climate)

  - the aspects of the environment that produce renewable resources such as water, timber, fish, solar energy

  - the functioning of society, despite non-renewable resource depletion

  - the quality of life for all people, the liveability and beauty of the environment'

  This is an anthropocentric view, in which ecological concerns play an important but subsidiary role to human wellbeing. The City of Sydney has committed itself to environmental sustainability through its Sustainable Sydney 2030 initiative.

- Ecological sustainability is defined by Callicott & Mumford(1997) as: 'meeting human needs without compromising the health of ecosystems'.

  The Nature Conservation Council of NSW(2005) defined ecological sustainability as concerned with:

  - The precautionary principle

  - Intergenerational equity

- Conservation of biodiversity and ecological integrity
- The improved valuation and pricing of environmental resources

In both definitions, human needs are set in an ecological framework. <u>Ecological sustainability</u> is thus an ecocentric view, one in which ecological wellbeing is vital. The role of the City of Sydney in respect of ecological sustainability is in its infancy.

While environmental and ecological sustainability are highly interrelated world views, environmental sustainability will remain a chimera('a fanciful mental illusion or fabrication') unless and until there is also ecological sustainability.

1.3 Urbanisation

'In the last 100 years an extraordinary change has occurred on the face of the Earth: cities are becoming our primary habitat'

(Girardet, 2008:3).

Wikipedia defines urbanisation as 'the physical growth of urban areas from rural areas as a result of population migration to an existing urban area (http://en.wikipedia.org/wiki/Urbanization).

According to Larson and associates(2004), hominids began to occupy caves about one million years ago. The use and control of fire by humans, perhaps 500,000 years ago, led to more permanent cave dwelling and accelerated interactions between humans and the plants and animals around them. Urbanisation of humans began in the Fertile Crescent, Mesopotamia, some 7000 years ago. According to McMichael(2001:251): 'By around 3,000 years ago there were only four cities in the world with an estimated 50,000 or more inhabitants … By 2,000 years ago, when world population approximated 200 million people, there were still only about 40 such cities … less than 5% of world population lived in urban environments in 1800 …'. Urban populations increased rapidly with industrialisation, with 75% of populations in developed countries now living in urban areas; by 2030, this figure will be 84%. In Australia, about 88% of the population was urbanised in 2005; this is expected to reach almost 92% by 2030, making Australians one of the most urbanised societies on Earth(UN Department of International Economic & Social Affairs, 2005).

Globally, only about 13% of humans were urbanised in 1900, reaching 29% in 1950, 49% in 2005, 50% in mid-2007, and likely reaching 60% by 2030(UN Department of International Economic and Social Affairs, 2005; Moreno & Warah, 2006). Urban populations are now increasing by 180,000 people daily, with most of this growth in less developed countries – especially in Asia and Africa. Here, urban populations will grow from 1.9 billion today to 3.9 billion in 2030. The urban populations of developing countries are expected to reach 50% in 2020(UN, 2001). Urbanisation will continue apace across the globe throughout much of this century.

1.4   Ecological footprint

The concept of 'ecological footprint' helps us to appreciate the ecological consequences of urbanisation. An ecological footprint most simply is the amount of land, water and air needed to support a person (http://www.globaleducation.edna.edu.au/globaled/ go/cache/offonce/pid/1965). A more relevant definition here is 'the measure of how much land and water area a human population needs to produce the resources required to sustain itself and to absorb its wastes, given prevailing technology' (http://en.wikipedia.org/wiki/Ecological_footprint). Australians at present each have an ecological footprint of 7.8 hectares – that is, it requires almost eight football fields of productive land to sustain each one of us.

The City of Sydney had 170,000 residents in June 2009 who, with the Australian average individual footprint of 7.8 hectares, required 13,260 km^2 of productive land to support them. That is, over 500 times the city's area(26.15 km2), or an area greater than the whole of metropolitan Sydney(12,144.6km^2).

The human/nature relationship in cities worldwide will become an increasingly vital consideration as efforts to reduce the ecological footprint of humans intensify.

1.5   Loss of ecological knowledge

'Although usually seen as an economic or demographic phenomenon, urbanization also represents a human ecological transformation … Understanding the dramatic shift in human spatial and material relationships with the rest of nature is a key to sustainability'

Rees & Wackernagel(1996:223)

Girardet(2008:3) succinctly encapsulated the ecological consequences of urbanisation: 'All-out urbanisation is fundamentally changing the condition of humanity and our relationship to the Earth. We humans have been undergoing a staggering transformation: from living in a world of farms, villages and small towns, we are changing ourselves into an urban species. From relying primarily on nature's local annual harvest, more and more of us are drawing on global food and timber supplies. From a reliance on purely local energy sources, we have switched to tapping into stores of non-renewable energy resources across the world. From leading locally self-sufficient lives, more and more of us are becoming citizens of a human-centred planet'.

For some time, there has been concern about the nexus between the global decline of native cultures and the loss of traditional ecological knowledge. Native peoples have developed deep ecological understandings of their world, usually over millennia. Inter-generational communication of these understandings has been verbal. Yet: 'In one century, the world has lost about 600 languages. Today, half of the approximately 6,000 remaining languages are either extinct or highly threatened and, at current rates, 90 percent will be lost in the 31st century'(Judge, 2000). In Australia: 'Before European settlement in 1788 … [there] … were around 600 to 700 distinct nations on the Australian continent, many of which had their own language - over two hundred in fact. Today, only half this number survive in any given form and only 20 are in common use'(Anon, 2006). Loss of traditional ecological knowledge accompanies loss of culture/language.

The situation in Australia is particularly acute. European settlement in 1788 was by peoples from societies which had already experienced multiple invasions of their homelands by others, with a (sometimes partial) loss of native language and associated ecological knowledge. The early colonials brought with them ecological knowledge largely

irrelevant to the Australian context, and furthermore were mostly dismissive of the ecological insights gained by Australian aboriginals over many millennia. This unfitness has led to huge ecological degradation of a vast continent in just over two centuries.

The move from traditional lifestyles into market economies further attenuates ecological knowledge in urban peoples, as the following quotes indicate:

- *'… individuals with greater wealth tend to pay for natural resources … rather than farming or getting them for themselves'*(Chase, 2008).

- *'Various studies have described the mutually exclusive relationship between economic growth and environmental conservation … Understanding ecological knowledge loss is important to understanding the declining capacities of communities undergoing economic development to manage their natural resources and the future of ecosystem diversity in the light of current patterns of economic growth'*(Pilgrim et al., 2007:1004)

- *'The rate of disconnection with nature, particularly amongst young people in industrialised communities, is likely to be amplified by the growing virtualisation of nature through television and computer screens. For some children, these virtual encounters may be their only experience of nature …'*(Pretty et al., 2008:8).

Pretty et al(2008:8) documented some of the consequences to individuals of a loss of ecological knowledge: 'Time spent directly experiencing and interacting with nature(a problematic term to define) has been shown to improve psychological health and well-being, as well as increase physical activity levels … Spending less time in nature subsequently comes at a cost to health. It can also create an intrinsic disconnection with nature, leading to feelings of biophobia and a fear of the outdoors, perceiving it to be a wild and unfamiliar environment. Feelings of estrangement create an inability to care for and connect with nature, as cultural worldviews, beliefs and narratives lose their meaning and context'.

Again, these trends are particularly troubling in Australia which, as noted above, is among the most urbanised societies on Earth.

There is thus a diminishing capacity among urban humans to recognise how vital natural ecosystems are to human survival, a process initiated early in life (Louv, 2005):

- 'Within a space of a few decades, the way children understand and experience nature has changed radically. The polarity of the relationship has reversed. Today, kids are aware of the global threats to the environment – but their physical contact, their intimacy with nature, is fading. That's exactly the opposite of how it was when I was a child'(p.1).

- ' … as the young spend less and less of their lives in natural surroundings, their senses narrow, physiologically and psychologically, and this reduces the richness of human experience'(p.3).

- 'Yet, at the very moment that the bond is breaking between the young and the natural world, a growing body of research links our mental, physical, and spiritual health directly to our association with nature – in positive ways'(p.3)

- 'How the young respond to nature, and how they raise their own children, will shape the configurations and conditions of our cities, homes – our daily lives'(p.3).

It may be disastrous for human futures that, at the very time when natural ecosystems are under accelerating

erosion, urbanisation is rapidly weakening the bonds between humans and nature.

1.6   Historical perspectives

'Oslo shall manage its biological diversity in a sustainable way'

Oslo Kommune(2003)

City Council's recognition and acceptance of its ecological responsibility has emerged gradually, and haltingly, over the last quarter-century. The most compelling feature of this prolonged period has been the lack of policy development by Council regarding the City's ecology. Council's journey in respect of the issues of ecological sustainability and biodiversity is reviewed here.

The City of Sydney was incorporated in 1842, 167 years ago. For 140 years City Council neglected, indeed diminished, the ecology of this place. We have periodic insights into this process, such as a 1920 study into the birds of Sydney(Le Souëf & Macpherson, 1920).

A turning point in attitudes toward the natural environment of the City came with planting of the Moore Park Urban Forest - Stage 1 of which was completed in 1982 – largely at the instigation of Alderman Robert Tickner. At this time, City Council concerned itself with the generally accepted responsibilities of local government, so Tickner's initiative was exceptional.

In 1984, Council created a Parks and Recreation Department, which <u>inter alia</u> was concerned with street trees, Earth Week, and the Greening of Sydney awards. In 1989, under the administration of Jeremy Bingham, a 'Total Environment Policy' was being prepared for the City. The 1990 Annual Report noted that Council had participated in the Environment 90 Exhibition and Seminar at Darling Harbour and, under the heading 'Environmental Protection and Enhancement' the goal was 'to protect and enhance the environment of the City for the safe and orderly conduct of human activity' – a truly anthropocentric worldview!

Frank Sartor's administration established an Environmental Management Unit (EMU) in June 1991 to coordinate Council's newly endorsed 'Total Environmental Policy'. The policy aimed 'to conserve, enhance and improve the natural, built and social environment of the City through direct action and joint initiatives with public authorities, the business community and residents, with attention to changing community needs and the effects of possible future environmental changes'. At last, 150 years after its formation, Council had a policy(of sorts) to protect the City's natural environment.

By 1992, the Environmental Management Unit had been placed in the 'Corporate and Community Services' Division, and 'Council's Total Environmental Policy generated considerable interest among cities represented at the first World Urban Forum in Brazil'. Council became a founding member of the International Council for Local Environmental Initiatives. 1993 saw Council produce its first State-of-the-Environment Report and initiate an annual Sydney Environment Week. The former, under the heading 'Living Things and Habitats' described important wildlife, habitat corridors, management of weeds and feral animals, identification of unique landscapes or vegetation etc in the City.

This enthusiasm for the natural environment was short-lived. The 1995/6 Annual Report saw Environmental Management placed under 'Community Health, Safety, and the Environment' in the Urban Services portfolio. The

State-of-the-Environment Report reverted to traditional Council concerns, with biological diversity seen as vermin control, feral cats, street trees, parks and playgrounds.

The 1996/97 Annual Report further downgraded ecological issues: 'Environmental management is being integrated into management responsibilities across the range of City of Sydney's activities. This ensures that all operational units identify and respond to environmental issues as part of their core business activities. Management of cross-Divisional environmental issues is the responsibility of the Service Planning and Policy Unit'. Champion-less, ecological concerns were atrophying.

Ecologically-sustainable Development(ESD) was briefly mentioned in the 1997/98 and 1999/2000 Annual Reports, still in Frank Sartor's time, but the actions reported were all environmental rather than ecological. These actions were reported under such headings as 'Green City' and 'Sustainable City'; initiatives under the Cities for Climate Protection program were also reported.

The first year of Lucy Turnbull's administration, 2002/03, saw 'Sustainable City' as one of 11 key performance areas, with the goal 'to promote ecologically sustainable development principles into our everyday policy programs and practice'. The need to promote biodiversity was noted, but the actions and results reported were mostly environmental. The most significant ecological action was to produce 10,000 plantable postcards containing paperbark seeds. Also, 'the City inflated a 15-metre humpback whale in Hyde Park to celebrate the United Nations International Year of Water. Environment and Stormwater Officers offered environmental advice and gave calico shopping bags and tree seedlings to the public'!

Clover Moore has committed her administration to becoming an environmental leader, and a broad and welcome portfolio of programs has been developed since 2004. Her initiative includes biodiversity, along with the more traditional environmental concerns of local government. On National Tree Day in 2004/05, 6,547 native trees and plants were planted. Environmental development was placed into the Strategic Planning and Project Development Division in March 2005.

Emergence of the Sydney 2030 project in 2005/06 recognised the need to plan such transformative processes over timeframes well beyond the lifetime of any one Council. Council's Charter recognised the need 'to properly manage, develop, protect, restore, enhance and conserve the environment of the area for which it is responsible, in a manner that is consistent with and promotes the principles of ecologically-sustainable development'.

The 2006/07 Annual Report committed Council to work towards 'reducing our environmental footprint and achieving 'carbon-neutral' status', and recorded Council's endorsement of a comprehensive Environmental Management Plan.

The Moore administration has achieved remarkable progress since 2004 towards improving the City's environmental performance. BUT, more than a quarter-century has passed since Rob Tickner planted the first tree of the Moore Park Urban Forest, now under the Eastern Distributor, and still the City's biodiversity is in decline.

1.7   This report

Burgeoning urban populations and global moves toward ecological and environmental sustainability require the long-standing relationship between humans and nature in and around cities be substantively revised. Reflecting the biocity concept developed for Adelaide(Daniels & Tait, 2006), this report makes the case for fundamentally changing the human/nature relationship in Sydney. The report examines Pyrmont peninsula as a microcosm of urban living in four parts:

1. The ecology of Pyrmont peninsula at European settlement in 1788

2. Transitions of the peninsula to the present, which have so profoundly diminished that ecology

3. The ecology of Pyrmont peninsula in 2008, 220 years after European settlement

4. Strategies to re-orient the administration and communities of the City of Sydney towards, rather than away from, ecological sustainability.

1.8   References

Anon, 2006, The loss of indigenous languages – the sociological effects, http://www.bbc.co.uk/dna/h2g2/A12645939.

Callicott, J.B. & Mumford, K., 1997, Ecological conservation as a conservation concept, Conservation Biology, Volume 11, Issue 1, pp.32-40.

Chase, T., 2008, Ecological knowledge, http://www.google.com/search?client=safari&rls=en&q=%22ecological+knowledge%22+thomas+chase&ie=UTF-8&oe=UTF-8.

Commissioner for Environmental Sustainability, Victoria, 2006, What is environmental sustainability? http://www.ces.vic.gov.au/CES/wcmn301.nsf/childdocs/-441BB07721D61152CA256F250028C5FB?open

Daniels, C.B. & Tait, C., eds, 2006, Adelaide. Nature of a city: the ecology of a dynamic city from 1836 to 2036, Adelaide, BioCity.

Devenport, R., 2004, Transposition: 5 jewellers respond to Pyrmont's history, Pyrmont, Jewellers and Metalsmiths Group of Australia, NSW Inc(ML 739.27074/1).

Girardet, H., 2008, Cities People Planet: urban development and climate change, 2nd edition, Chichester, West Sussex, J.Wiley(SRL N307.1216/48).

Judge, J., 2000, Environmental degradation aggravated by loss of traditional knowledge, WWF says, http://www.iema.net/news/envnews?aid=2453.

Larson, D., Matthes, U., Kelly, P.E., Lundholm, J. & Gerrath, J., 2004, The urban cliff revolution: new findings on the origins and evolution of human habitats, Ontario, Fitzhenry & Whiteside.

Le Souëf, A.S. & Macpherson, J., 1920, The Birds of Sydney, Emu, vol. 20, no. 2, pp. 82-91.

Louv, R., 2005, Last child in the woods: saving our children from nature-deficit disorder, Chapel Hill, NC, Algonquin Books.

McMichael, T., 2001, Human frontiers, environments and disease: past patterns, uncertain futures, Cambridge, Cambridge UP.

Moreno, E.L. & Warah, R., 2006, The State of the World's Cities Report 2006/7: Urban and slum trends in the 21st Century, UN Chronicle, Volume 43, Issue 2, pp.24-29.

Nature Conservation Council of NSW, 2005, Education for ecological sustainability policy, Sydney, The Council,

Oslo Kommune, 2003, Summary: Urban Ecology Programme, http://www.byradsavdeling-for-miljo-og-samferdsel.oslo.kommune.no/miljo/english/urban_ecology_programme/article14507-4791.html (accessed 21 May 2008).

Pilgrim, S.E., Cullen, L.C., Smith, D.J. & Pretty, J., 2007, Ecological knowledge is lost in wealthier communities and countries, Environmental Science & Technology, vol. 42, no. 4, pp. 1004-1009.

Pretty, J., Adams, B., Berkes, F., Ferriera de Athayde, S., Dudley, N., Hunn, E., Maffi, L., Milton, K., Rapport, D., Robbins, P., Samson, C., Sterling, E., Stolton, S., Takeuchi, K., Tsing, A., Vintinner, E. & Pilgrim, S., 2008, How do biodiversity and culture intersect?, Plenary paper for Conference Sustaining Cultural and Biological Diversity in a Rapidly Changing World: Lessons for Global Policy, organised by American Museum of Natural History's Center for Biodiversity and Conservation, IUCN-The World Conservation Union/ Theme on Culture ande Conservation, and Terralingua, 2-5th April 2008.

United Nations, 2001, Urban Millennium: Special Session of the General Assembly for an Overall Review and Appraisal of the Implementation of the Habitat Agenda, 6-8 June 2001, New York.

UN Department of International Economic and Social Affairs, 2005, World Urbanization Prospects: The 2005 Revision, New York, United Nations http://www.un.org/esa/population/publications/WUP2005/2005wup.htm(accessed 5.1.2008).