

Redreaming the rural landscape

Jason Alexandra*¹ and Curtis Riddington²

Preprint version as accepted for publication by the British journal Futures. Expected date of publication: late 2006, with online version available in April/May 2006. See <http://www.sciencedirect.com/science/journal/00163287>.

* Jason Alexandra, Alexandra and Associates, 16 Homestead Rd, Eltham 3095 Victoria, Australia. Tel/fax: 61 3 03 9431 3657. Email: jasona@impag.com.au,

Abstract

Human cultures and landscapes co-evolve. Australia's rural landscapes are changing due to profound shifts in cultural, institutional and economic relationships with nature, and the values and meaning of landscapes are being reinterpreted. There are signs that a new land ethic is emerging in which love of nature and collective action are dominant.

In this essay we broadly describe the nature and directions of the changes we have observed and offer three scenarios to illustrate possible directions these might take in Australia's agricultural inland, northern savannas and coastal zones. The scenarios illustrate how a motivated and inspired people could live in this unique, ancient and beautiful continent; and how an ethos of environmental repair and sustainable habitation could transform rural landscapes, lifestyles and livelihoods.

Key words: Rural policy, landscapes, natural resources, sustainability, cultural change, permaculture

¹ Principal and corresponding author - Alexandra and Associates – 16 Homestead Rd Eltham 3095 Victoria, Australia

² Research assistant - Alexandra and Associates, 16 Homestead Rd Eltham 3095

1. Introduction

Landscapes co-evolve with human cultures. They are shaped by the dominant beliefs, values, knowledge and technologies as well as genetic materials. Australia's landscapes reflect 300 million years of separate evolution, 60,000 year of human occupation, and the impacts and achievements of the past 200 years [1].

'Redreaming' Australia's landscapes requires insight into the geological, evolutionary and cultural forces that have shaped the continent and its biota; understanding of the potent signs of transformation; and creativity to imagine possible futures. In this essay we identify contemporary drivers of change, discuss their impacts on rural policies and practices, and illustrate the many ways people are already shaping the landscapes of the future. We then sketch a series of possible futures for inland Australia, for the northern savannas and for the continent's coastal zones. Our futures scenarios are unashamedly optimistic and are based on the hope that, within the next 200 years, Australia will emerge as a mature, independent post-colonial republic in which people work creatively and respectfully with the ecological systems they are part of.

We expect that future landscapes will continue to reflect powerful market forces and dominant social institutions but, in our preferred futures, market forces will be tempered by community values, including strengthening respect and love of nature; acknowledgement of pre-European occupation and rightful title; acceptance of the global challenges of sustainability; pursuit of human rights and equity; global accountability; and a suite of other humanist ideals arising from Australia's unique place in the world.

2.0 Australia's landscapes - a state of transformation

Profound changes are now occurring in Australian agriculture and natural resource management which reflect, in part, the declining significance of agriculture in the national accounts. Increasing regulatory constraints on native

vegetation clearing and water use for irrigation demonstrate that the once-unfettered “right” to transform the continent in the quest for greater production has been revoked. Intensive agriculture is becoming concentrated in areas suited to reliable production; Aboriginal ownership, absentee landlords, and structural and demographic change are re-arranging land tenure patterns; and production systems, technology and modes of human habitation are being reinvented. Increasingly non-agricultural values, policies and relationships are reshaping land use over much of the continent, and society’s goals for land management are being redefined to explicitly embrace a fuller range of production, lifestyle and amenity values. Nature is now being seen as both the provider of life-fulfilling ‘ecological services’ and in need of human care rather than as a cornucopia of resources available for exploitation

Bioregionalism is also emerging as the basis for new understandings of this large and biologically diverse continent. This is apparent in the many localised festivals, such as the Return of the Kingfisher festival in Melbourne’s inner-urban Merri Creek, in which the symbiosis between cultural and natural heritage is recognised and natural icons are revered and celebrated. In 21st century Australia nature and culture are becoming more purposefully enmeshed, the symbolic and the physical more broadly entwined. Practices such as revegetation and restoration of degraded landscapes are now recognised as being both symbolic and practical activities through which local people are creating the landscapes of the future. Communities, markets and dominant social institutions are reflecting these changing values, and our sense of identity and understanding of our place in the world are co-evolving as we collectively respond to the global and local challenges of sustainability. There remains a pressing need for land literacy [2], as we still need to learn from nature, to become adaptive managers [3], and to respect the knowledge of country that has been acquired by indigenous landowners over thousands of years [4]. We Australians still have much to learn about truly caring for country.

2.1 Respecting the past – constructing tomorrow’s landscapes

In Australia, rural landscapes are both culturally and biologically diverse, and reflect the ways ‘natural resources’ have been managed, perceived and understood over time. Every day people are “constructing the landscapes of tomorrow” [5] through their beliefs and actions.

Prior to European settlement Aboriginal Australia consisted of many nations, each of which occupied a distinct region that was named, understood and managed in accordance with “the traditions, value systems and knowledge basis of each tribal group” [6]. The entire continent is still laced with diverse symbols and meanings which pre-date European occupation: corroboree grounds, burials, dreaming trails and initiation sites, for example. A simple sentence on a big mural at our local suburban swimming pool affirms the diverse meanings landscapes have for the original landowners: “Before contact of Europeans the whole of Wurundjeri land was our supermarket, chemist and university.”

Even though most Australians now live in cities on the coastal plains, rural landscapes are still the shapers of our spirits, values, and cultural icons: “vast blue skies, red earth... white beaches, the scent of eucalyptus” [7]. While places that are primarily valued for commodity production might best be described as factories or mines, others – the landscapes that we value in deeper, more multifaceted ways -- are more analogous to cathedrals, theatres, great museums or art galleries.

2.2 The impacts of agriculture

Over generations the combined impacts of individual actions have transformed Australian landscapes at a scale beyond which the individual actors could ever imagine: a settler wielding an axe in the nineteenth century could not have foreseen that, within a few generations, 18 billion trees would have been cleared from the Murray Darling Basin [8]; nor could European settlers have imagined the profound cumulative impacts of their labours that are now manifesting as

salinisation, eutrophication, extinctions, and desertification [9]. Because of the lag times between cause and effect in large-scale ecological systems, the continent is only gradually revealing these scars from the past two hundred years of agricultural development. The causes, impacts and significance of such environmental degradation have been extensively documented and many of us now believe that nothing less than “a revolution in landuse” [11] is required to address them.

2.3 The changing place of agriculture

“The global terms of trade aren’t going to suddenly flow back in the direction of commodity producers” [12].

In 1836 Charles Darwin concluded that Australia could never become another great agricultural nation like America because its soils were too poor and its climate too unpredictable. Instead it could be “the centre of commerce for the Southern Hemisphere”, he suggested, and might even one day develop its own “manufactories” [13]. Successive governments have ignored Darwin’s observations and have misunderstood the severity of the continent’s natural constraints [14]. Grand dreams of taming the rivers, greening the desert, settling the inland and making land productive still run deep in the national psyche [15]. Powerful agriculturally biased institutions continue to exert considerable influence, often by overstating the economic importance of agriculture [16] in relation to now-dominant sectors, such as education, tourism and financial services but, although agricultural commodities remain important exports, it is Australia’s multicultural cities with their diversity of skills and enterprises that are now the powerhouses of growth and competitiveness in the global economy. In this sense, Darwin’s insights are being ratified by history.

2.4 Environmental and cultural challenges to agriculture

Approximately 62% of the continent is now used for agriculture or pastoralism, and irrigation accounts for about 70% of all water use [17]. Mounting evidence of

the environmental impact of agriculture on terrestrial,³ coastal and aquatic ecosystems, including the Great Barrier Reef and the Murray Darling river system, has led to substantive questioning of the long-term costs and consequences of agricultural industries, and to a broad acceptance of the need for major reform. The exploitation of additional water and land resources for agricultural production is now constrained by legislation. Even though, these legislative changes have engendered acrimonious national debates there is considerable support for new policy directions, even in rural Australia, as is demonstrated by the scale of local environmental activism and the hundreds of thousands of people who are involved in Landcare [20]. But although governments have allocated billions of dollars for natural resource management programs to combat salinisation, for example, they have so far failed to implement policy reforms that are appropriate to the scale of the ecological damage that has already been done to rural landscapes. While the budget allocations at least signal the beginning of a shift in thinking, the observations of the authors of a 1998 Commonwealth report on land management remain valid:

...the incorporation of ecological sustainability into policy has been ad hoc, incomplete and tentative. ... Australian governments have yet to put in place a comprehensive, integrated and far-sighted way of promoting the ecologically sustainable management of natural resources [21].

2.5 Water and drought in a dry land

Australia's climate pulses through erratic cycles of wetter and drier years [22]. The continent's biology has adapted superbly to these variations [23] confirming that drought does not exist in nature, and that Australian nature does not conform to averages. Generations have been taught to love "a land of drought and flooding rain" [24], yet for most of the last century, dry seasons were accompanied by drought subsidies to farmers. A National Drought Policy Review

³ Exotic pests and land management practices are the major threats to Australia's unique fauna. Past mammal extinctions and the predicted extinction of 50% of woodland birds indicate the severity of these

concluded that “there are misconceptions underlying every facet of drought and drought policy” [25] and recommended that drought policies be based on the inevitability of recurrent drought. Yet, substantial drought support continues, with drought relief subsidies supporting the “survival of the incompetent” [26].

Agriculture, drought and water policy are intimately linked, with waves of government investment in irrigation infrastructure following each drought. Ongoing calls for further public investment in irrigation infrastructure have ignored the findings of a 1996 government report that stated “a continuation of past policies ... will severely and adversely affect every aspect of contemporary life” [27]. Australians are, nevertheless, gradually acknowledging the variability of our climate and may eventually abandon all forms of drought subsidies. Instead of incessantly responding to ‘natural disasters’ we may learn to accept and celebrate the fundamental cyclical and episodic nature of Australia: that the bush burns, floodplains flood and droughts dry-out the country.

3.0 Rethinking agriculture – applying ecological designs

Agriculture is both a material and social practice, in that “all operational chains involve aspects of production, exchange and consumption, they are part of a network of relations incorporating the material, the economic, the social and the conceptual” [28]. Farming works and reworks the earth, shaping landscapes with powerful tools – fire, earth moving equipment, molecular biology, biocides – draining wetlands, diverting rivers, clearing forests etc. Agriculture is, quite simply, reshaping the planet. During the 20th century, the world population tripled, water use increased six-fold and the area devoted to agriculture escalated. Technology, consumption patterns and population growth delivered such unprecedented rates of change that humans became the dominant evolutionary force on the planet [29]. And now some of us have realized that we

need to develop production systems that enhance rather than degrade ecosystem health, and that agriculture itself must change.

Although Australian farmers and pastoralists have historically focused on large scale production of export commodities a number of rural Australian thinkers have emerged to radically re-imagine agricultural systems in globally significant ways. One of the outcomes of such innovative thinking is permaculture, a design framework for creating ecologically sound systems of human habitation that combine plants, animals, earthworks and structures. Permaculture practitioners create productive and resilient systems by attempting to mimic the diverse and complex interactions of nature. Permaculture concepts are being adapted and applied globally to resolve many environmental and development dilemmas [30].

Sustainability imperatives demand that we innovate in both technology and policy fields, but more importantly that we innovate the way we innovate [31]. The redesign of agriculture may be a useful precedent for the design of other industrial ecosystems [32]. In all aspects of production, genuinely innovative thinking is critical because, as former Prime Minister Paul Keating concluded, “ideas are all Australia has ... Not military might, or a large population, or unique resources. ... Ideas ... must sustain our democracy, nurture our community and drive our economy” [33].

4. Rethinking the nation

“...the way people think of themselves in the cosmos will affect the way they behave in the physical framework of their lives” [34].

The Wik and Mabo Decisions of the High Court changed Australia’s national identity by establishing “native title” in law [35]. These judgements defined the limited tenure of pastoral leases and demolished the legal fiction of “terra nullius”, a lie which had infected Australia for two hundred years [36]. Indigenous Australians now own and manage over 16% of the landmass [37], including the

majority of the coastline between Broome and Cape York and a number of islands [38]. They also co-manage significant national parks, such as Kakadu .

But most of Australia is now owned and managed by migrants or the descendants of migrants who make up the overwhelming majority of the population. Waves of newcomers, many of them economic and political refugees, have brought with them diverse cultural and genetic resources to enrich Australia's civil and economic culture and create hybrid agricultural systems that are based on knowledge and genes from every inhabited continent [39]. In northern Australia, for example, tamarind trees were introduced by Macassans who arrived each year in large fleets of fishing praus. The trees seeded prolifically and now the seasonal fishing camps can be identified from their tamarind trees [40]. In central Australia a "hybrid agriculture" has evolved from the introduction of date palms and camels from Southwest Asia; rabbits and beef cattle from Europe; citrus from China; grapes, mulberries and figs from the Mediterranean; store food that is trucked in from the coastal cities; and bush tucker which has co-evolved on this continent for millions of years. Given this diverse agricultural heritage Australian "farming" systems of the future will be mixes of indigenous, exotic and colonial components, just as current systems are "hybrids" of indigenous and exotic species brought together by the "historical accident" of British colonization.

5. Building and valuing resilience

Human life depends on the earth's capacity to deliver 'ecosystem goods and services' like food, clean water, timber, genetic resources, pollination, soil formation, disease regulation, etc. Our ongoing well-being is dependent on the capacity of large-scale ecological processes to continue to deliver climate regulation, waste assimilation and nutrient recycling. It is therefore imperative

that ecosystems are managed to retain their resilience⁴ and tolerance to disturbance without collapsing [41], and that policy frameworks and institutions are established to ensure this. And this is slowly occurring. Global markets are emerging to bring previously unpriced natural ‘services’ into the formal economy, for example: “We are on the verge of a new era in which transparent, well regulated markets in ecosystem services are making conservation a strong business opportunity,” according to Jose-Maria Figueres, former president of Costa Rica and Senior Managing Director of the World Economic Forum [42].

5.1 Life-fulfilling Ecosystem Services

Many ‘environmental services’ associated with the production of goods (e.g. fish stocks), or measurable biophysical processes (e.g. water purification), are easily quantified, but landscapes also have seasons, meanings, layers of history, purpose, and public and private symbolism. The life-fulfilling services they provide also include the provision of aesthetic beauty and serenity; cultural, intellectual, and spiritual inspiration; a sense of place; scientific discovery; and basic existence values [43] which cannot be easily quantified. Concepts such as “landscape aesthetics”, “cultural identity” and a “sense of *place*” are bound up in the physical and biological attributes of landscapes, as are people’s celebrations, reverence, curiosity ... All landscapes, all places have multiple layers of meanings that are open for interpretation through the vast array of lenses people bring to them. The environment provides the features, and culture turns them into icons, symbols, a medium for powerful exchanges.

In our complex, multi-cultural, post-modern Australia understandings of landscape are far from homogeneous. The diverse relationships people have with our landscapes - what they see, understand, interpret and value - are dynamic, and at any time, any given landscape can be a confusion of moral

⁴ Resilience is defined as the capacity of social and natural systems to sustain productivity and to reorganise in the face of a variety of pressures and changing conditions [41].

universes, clashing ideologies and conflicting perceptions. Despite this diversity of understandings, our landscapes and their flora and fauna are defining features of Australians' sense of national identity. They figure prominently in our histories, our various dreamings, and our personal stories. They are displayed on our currency and coat of arms, and in our visual arts, from ancient rock galleries and the central desert dot paintings, through Bouvelet and Von Guerard's Romantic celebrations of the grandeur of nature, to the impressionists capturing fleeting moments of Australia's brilliant changing light, and into the work of new generations of image-makers. In the second half of the twentieth century Albert Namatjira immortalised the 'outback', for example; and Arthur Boyd, Albert Tucker, Sidney Nolan, Fred Williams and John Olsen reinterpreted our rural myths and landscapes. International interest in aboriginal art emphasises the importance of images that are not merely pictures but are instilled with meaning; as symbols of a deeper cultural connection with country. But like the landscapes themselves, the meanings of symbols change over time: for example, salt has now become a powerful symbol of environmental damage.

Fortunately the revitalisation of degraded landscapes is becoming a major collective endeavour, a community art-form finding clear expression in collective attempts to restore landscapes through community movements like Landcare. Just as thought, observations and skill are used to create culturally significant symbols, environmental repair brings landscape back to life, in a symbolic and material healing of degraded ecosystems.

6.0 Murray Darling Basin (MDB) catchment renovation: scenario 1

In 2105 an international delegation of sustainability experts interested in catchment restoration toured the Murray Darling Basin (MDB). Flying low over the catchment this is what they saw.

Blue haze hovers over ancient mountain forests in the south. From the foothills, north to the plains large areas of plantations and woodland regrowth dominate.

Streams snake over the riverine plains, buffered by riparian forests, amongst mosaics of plantations, short rotation bio-energy forests, and a diversity of crops. The slopes have become “a band of regenerated foothills ... from the Grampians to southern Queensland protecting the high-production agricultural zones on the plains” [44].

The rivers sustain significant irrigated crops, despite the reallocation of water to environmental flows, native title claims and climate change. The fertile, arable plains support sophisticated “industrial ecosystems” producing a variety of industrial feedstock, biofuels, bio-pesticides, novel pharmaceuticals [45] and intensive horticulture and viticulture. Precision farming systems use sophisticated monitoring technology to control inputs and focus cropping on areas that maximise profit and minimise risk, including environmental risks. Pest management is bio intensive and relies on beneficial insects, natural pathogens and plant based extracts. Bio-digesters produce energy and fertilisers from “waste products” [46].

Traditional crops are still grown, but many new crops feed the 21st century revolution in biological and chemical engineering producing nutritional supplements, fuels, oils, medicinal herbs, resins, tannins, natural rubber, gums, waxes, dyes, flavours and fragrances [47].

Former grazing properties support plantations and regenerated forests, earning income from carbon credits, biodiversity bonds, biomass energy and utility timber production. Small residential villages - clusters of eco-housing - are surrounded by productive gardens, small farms, orchards and vineyards. Detailed catchment plans, revegetation and threatened species management plans are being successfully implemented, with few remaining signs of land degradation.

Agriculture, manufacturing and food processing remain important to local economies with sizeable dairy, cropping, horticulture and timber industries. Agricultural production is concentrated where it is profitable and sustainable, due

to ongoing international pressure to minimise agricultural subsidies. Damaging environmental practises are unviable as markets dictate strict environmental performance and proof of eco-efficiency using comprehensively audited, internationally recognised environmental management systems.

6.1 Rural Cities and Towns

The regional economy is a diverse mix of innovative industry and agriculture; environmental repair; forestry; recreation; residential development; conservation; and tourism. Regional cities are vibrant centres with high quality health, retirement, education and research, technology and lifestyle services. Populations are growing steadily with people choosing to “migrate” from the expensive, crowded, resource poor cities to regional centres.

The Murray Darling region has a successful history of environmental restoration and is often used to demonstrate the capacity of Australia’s environment industry. Adaptive management of salinity and biodiversity has supported theoretical advances in complexity, resilience and ecosystems adjustment.

Australia is governed by 67 bioregional governments which arose after the constitutional crisis of 2024 when State and local government were abolished. The 7R’s of bioregional government are: roads, rates, recycling, revegetation, riparian restoration, regional re-investment; and resilient regional communities.

6.2 The Catchment Revegetation Investment System Implementation Scheme (CRISIS)

Around the beginning of the millennium it became accepted that a concerted national effort was required in the Murray Darling Basin (MDB). The Catchment Revegetation Investment System Implementation Scheme (CRISIS) was initiated to leverage private sector investment. It resulted in revegetation on a massive scale, and in new perennial cropping systems.

The scheme treated landscape renovation as a major infrastructure project funding vegetation management and enhancement, riparian, floodplain and wetland restoration. Cost effective methods like direct seeding, aerial seeding and triggering of natural regeneration were refined. Projects were planned in detail to improve biodiversity conservation; improve water quality; and produce raw materials. The regions' new forests produced biomass energy; wood fibre or pulp; carbon neutral fuel wood; and structural and furniture timber.

All CRISIS incentive payments are delivered using sophisticated contracts. Milestones and measurable outcomes, penalties and performance bonuses are written into all environmental service contracts. Innovative financial engineering has sponsored a wide range of service and related business. Land and revegetation costs are worked out based on cost sharing formulas and by competitive tenders.

Three large companies compete for the majority of environmental services business, including land and waterway renovation. Incentives payments vary according to the ecological priority assigned to a location. Farmers compete by offering generous lease agreements in exchange for equity in the Eco-Services Companies. These companies combine future forestry rights, carbon rights, water quality bonds and biodiversity bonds (including the Trout Cod and Murray Cod Bonds) to form highly profitable projects. They receive clean water incentive payments from MDB Commission. On the former sugar coast of Queensland they are active in rainforest timber and coral reef futures contracts. Success in Australia formed the basis of their global competitiveness.

They are listed on the Berlin and Melbourne Stock Exchanges, and perform solidly on the new Melbourne Eco-Services Business Index because of their rapid expansion, global growth prospects and underlying profitability.

The MDB is seen nationally as a practical symbol of Australia's capacity to restore degraded landscapes. Restorative agriculture and natural resources

management in the MDB demonstrate how research, education and innovation, advanced ecological management became major contributors to Australia's sense of national pride in "our can do attitude".

7.0 The northern savannas: scenario 2:

Early in twenty first century, Australia's northern savannas were a development frontier, with massive clearing and huge irrigation schemes trapping monsoonal rivers. Three powerful forces drove people-centred development: growth in wild lands tourism, aboriginal land ownership, and tropical diseases threats.

Tourism focused international attention on the incredible spiritual and cultural value of places like the Kimberleys, Arnhem Land, Cape York and the inland. Aboriginal land ownership grew from 16% of the continent in 2004 to over 54% by 2104 due to additional judicial decisions like Wik and Mabo that confirmed legal rights to property based on prior traditional ownership. Innovative community and enterprise development accompanied increasing land ownership.

Climate change related incursions of tropical diseases crossing the Torres Strait and spreading South drove dramatic changes in land use. Outbreaks of highly infectious livestock diseases led to the "National Livestock Protection Scheme". A levy on all producers funds a scheme to shut down grazing leases throughout Cape York, the Northern Kimberley and wetter parts of the Northern Territory to protect livestock industries further south. Aboriginal managers are paid to trap or hunt scrubber cattle, buffalo and wild pigs, an activity successfully marketed to frustrated big game hunters as "safari" hunting.

Private nature reserves are significant. Early in the 21st century large tracts of land were bought for conservation. Glue Pot Station was bought by Birds Australia. Mornington, Mt Zero and Brooklyn, Carnarvon Station and numerous other pastoral properties were bought as private nature reserves by organisations like Australian Wildlife Conservancy [48] and the Australian Bush Heritage Fund [49].

In a bizarre twist, Cape York was declared a Rhino refuge in 2101 by the IUCN. Early in the 21st century black and white rhinos and other endangered wildlife were released by an eccentric business man to establish wild breeding populations outside their home ranges. Many species bred rapidly away from poachers and predators, colonising extensive areas of savannas. Despite substantial research there is little evidence of disturbance to the balance in nature. Indeed, the idea of balance in nature is totally discredited [50], displaced by the new theories of dynamism and recombinant ecology. Any culling is opposed by animal rights activists and by tour operators who advocate more introductions into the “Ark”.

The aboriginal enterprises movement grew as more land came directly under Aboriginal management. Enterprises on Aboriginal land combine economic, cultural and artistic activities with living shade and shelter, intensive food garden production, wild harvesting, and “new” medicinal crops. Remote enterprises are flourishing as local people produce products to fulfil local needs and earn “export income” by selling art over the internet, or guiding cultural, fishing and wild lands tours into remote areas. Remote capitalism is the favoured way of overcoming welfare dependency [51]; satisfying local demands for fresh food; organising the harvesting and processing of wild resources; and managing art, craft and medicine enterprises [52].

The curious and diverse flora of Australia includes many biologically active compounds and medically active compounds. Interest in plants used by indigenous communities for medicines intensified in the 21 century when a systematic investigation of world’s medicinal plants was finally completed, and advances in molecular biology made powerful analytical tools available for product discovery.

Since the Aboriginal rights movement successfully claimed “intellectual property rights” for indigenous medicines, all companies undertaking bioprospecting must now pay royalties if links to cultural knowledge about plant uses can be

established. Prior to this agreement knowledge which had been the heritage of indigenous peoples was being appropriated as ‘discoveries’ by intellectual property ‘pirates’. After this agreement the links between knowledge and remote development were carefully cultivated, so that now indigenous communities cooperate with bioprospectors and are partners in the R&D that leads to many new products, including antibiotics, pesticides and skin treatments.

Tourism is also changing now that people stay longer at their destinations. Much of the transport is provided by large sailing ships and wind-based land transport systems that are seasonally constrained by prevailing winds. Travel takes time and is expensive in other ways so many “tourists” choose to take a kind of sabbatical in northern Australia, staying for a year or two, travelling slowly and working and learning with local people. The lack of pace is one of attractive aspects of travelling north.

In the late twenty-first century Australia’s northern savannas are landscapes that are instilled with meaning through their active links to Aboriginal culture and the ecologically sensitive strategies by which they are managed. For all Australians the North has become a powerful symbol of enlightened resource management choices, a place where people finally recognised that our greatest natural resources were our wild lands, our still-vast areas of inspirational scrub.

8.0 The coast: scenario 3:

Australia’s coastal regions experienced the long boom – from 1980 to 2080 - with massive in-migration resulting in the population doubling many times. Initially, concerns focused on stressed infrastructure, environmental damage and inappropriate development like converting mangroves to canal estates. However, strident local activism resulted in carefully planned, environmentally sensitive urban growth. With hindsight the big shift seems inevitable, given Australians’ love of the sea, the increasingly crowded and expensive cities and the benign coastal climates. Coastal population growth resulted in a “string of pearls”

settlement pattern down the Eastern Seaboard. Connected by the East Coast rail, cycle ways and road systems each “pearl” is separated by parks and nature reserves.

Local activism continues to protect the desirable lifestyle and environment from Port Douglas in North Queensland to Port Lincoln in South Australia. Regional councils’ prospects of staying in power depend on their planning and development policies. Residents jealously guard their localities, their local vegetation, their rivers, wetlands, estuaries and beaches from inappropriate urban, agricultural or industrial development. A common campaign motto is “Send industry inland - where they want it”.

The hinterlands around each town are populated with “blockies”,⁵ small farmers and “bushies”.⁶ Here 20th century experiments with solar housing, permaculture gardening, organic farming, farm forestry, bushland regeneration and telecommuting established habitation patterns that transformed these landscapes. The decades of sugar cane or dairy farming dominating the coastal valleys are distant memories, occasionally jogged by aging photos in local museums. Now housing, nature and production intermingle. Human population densities vary, with village clusters and dispersed housing surrounded by small farms, orchards and forests. Intensive horticulture is common. Many farms integrate forestry, small crops, gardens and home based industries. Native animals are the main pets, with ring-tail possums and quolls common. A strict permit system is required to keep domestic cats.

Thriving farmers’ markets provide vivid evidence of local productivity and prosperity. The robust regional economies remain largely insulated from the global recessions of the 21st century, caused by fossil fuel and material shortages, carbon pollution constraints and climate change impacts. With its

⁵ People living on small rural lots, mostly for lifestyle reasons, sometime called hobby farms

⁶ People who live by choice in the bush, a modern forest dweller

prosperity, enviable lifestyles, clean environment, beaches and biodiversity the coastal strip is the preferred place of habitation for the new affluent class – the telecommuting, global professionals. Servicing the needs for housing, education, health, aged care, recreation etc remain important aspects of the regional economies, while international consulting, tourism, research and clean industries contribute to Australia’s international reputation as an environmental custodian and innovative culture.

Local planning controls stringently protect community aspirations for carefully controlled urban development and land uses consistent with health, lifestyle and environment. Organic agriculture is accepted in rural zones, but any other production requires consent with stringent controls and enforcement. Organic production has been rising since about 2020. In history classes, this period is portrayed as a defining period when sustainability became central, gradually transformed all aspects of public policy, including industry, trade and international relations.

Most small farms produce a combination of small livestock, often fish, wallaby and guinea pigs; fruit, nut and vegetable crops; value added goods; and timber for a wide variety of uses. These systems are complex and efficient both biologically and economically [53] utilising human and natural resources and deliberately generating symbiotic benefits. Permaculture design has become an established profession (despite ongoing disputes about standards) based on early theoretical work on developing complex, multi-crop polyculture systems [54].

While small individually, these farms are collectively important to the regional economy. Organic and fair trade certification guarantees access to the many local and export markets.

Small farms productivity is supported by active R&D and experimentation. Numerous dispersed innovation networks link the universities with enthusiastic

private R&D interests [55]. The networks started when large Government agricultural research agencies showed little interest in funding polyculture systems and grew when all centralised R&D was abolished. Early work on permaculture, rare fruits, bamboo, rainforest regeneration, farm forestry and native food crops was started and undertaken by enthusiastic individuals who pioneered sizable industries.

8.1 International Centre for Cooperation on Permaculture and Polycultures

The International Centre for Cooperation on Permaculture and Polycultures (ICCPP) is a UN funded research and education complex based at several coastal universities. IPPCC focuses on advancing integrated, multi-crop agricultural and human habitation systems. The Centre's recent review found that Australia's small farm polycultures generated substantial benefits including the following:

- insulating Australia from global shocks caused by escalating fossil fuel prices and climate change;
- improved nutrition, employment
- increased farmer pride and satisfaction through active involvement in developing environmentally stable, regenerative agriculture;
- enhanced economic and materials self sufficiency;
- numerous high value exports;
- biodiversity conservation on farmland;
- efficient production systems based on mimicking functional relationships in nature, such as nutrient recycling and successional pathways;
- overcoming reliance on synthetic chemicals by using habitat diversity principles;

- international recognition through education and research programs; and
- enhancing Australia’s status as a knowledge exporter with practical relevance to the billions of people who are now fed from gardens and small farms.

The overall focus of permaculture has changed little in 220 years. The IPPCC still focuses on creating productive, environmentally responsible and resilient systems that intertwine agriculture and human habitation, mimicking nature’s ecosystem relationships. However scientific and professional advances have established stronger theoretical foundations in ecology, economics and architecture.

The IPPCC functions as a hub for a global network of permaculture organisations that focus on researching and teaching practical systems of human habitation for all cultures and climatic zones. The designs offer proven, integrated approaches to delivering water and energy efficiency and resilience of houses, farms, suburbs and villages. This network is influential in applying sustainability principles to the design of human habitation and food gardening around the world because it creatively solves environmental and development dilemmas.

8.3 Symbolic activities

But life is not all about work, food or economics – play is critical to human learning and wellbeing. The east coast is famous for play. Fun is still the biggest industry along the coast. Surfing is the official sport of all Eastern Australian bioregions and is understood as being equal parts religion, nature and ocean worship, individual challenge and hedonism.

Festivals and holidays of all sorts are abundant. A visiting anthropologist would probably describe the community as animists given the amount of nature worship people are involved in, as signified by the iconic creatures that feature in festivals, art works and regional totems. But the people temper their nature worship with a strong global perspective that is known as “one-planetism”.

The first documented reference to this philosophy of sharing global resources responsibly was found as graffiti in the late twentieth century: “form one lane” road signs along the Pacific Highway were changed to read “form one planet” by adding a “p” and “t”.

The dominant belief systems are made up of animism and globalism combined with ample scientific scepticism, humanism, liberalism and laconic Australian egalitarianism. This mix results in intense scrutiny of all forms of organised religion, mysticism and political beliefs, along with minimal respect and grudging tolerance for all forms of power or authority.

Nearly every Australia family has relatives that escaped to the coast in search of the good life, but the coastal regions are more than an escape: to the nation they represent a tangible example of the way Australians have learnt to live in greater harmony with nature through innovation and eco-design.

9.0 Conclusion

The above scenarios have been inspired by Australian friends and colleagues, who have taken up the challenges of understanding and learning to live in ways that are more compatible with the nature of this continent. Some express their love and respect through their art or science, some through their bushcraft or modern architecture, some through their surfing or their farming, but everywhere we find people who are deeply moved by the landscapes they inhabit.

Australians are amongst the most urbanised people and yet many of us feel a deep connection with the land. Something about this ancient continent has embedded itself in the collective psyche, shaping our culture and symbols and our way of understanding and interpreting country. Australians of all backgrounds are accepting the land as a storehouse of meaning and stories. Many non-indigenous Australians are attempting to live and work in ways which demonstrate their deep respect for country. After two hundred years, we are moving well beyond the colonial frontier with its violence and dispossession [57],

to a period in which a land ethic is being shaped by the complex interplay of forces we are experiencing in modern Australia, issues such as reconciliation, refugees and the republic. The landscape is a grand stage on which the struggle of becoming a 21st century nation is being played out, where many of the dilemmas of modern Australia can be seen: conservation versus development, treaty or continuing colonial warfare; ancestral rights or Torrens titles, new republic or old colony; more refugees versus existing settlers; landscape repair or opening up new frontiers. No one can be sure which mix of forces will shape Australia in the next 200 years, but without doubt, the choices we are making now are shaping the landscapes future generations will inhabit. People are already making the landscapes of the future; and imagination, insight, innovative thinking and passion are some of their most powerful tools.

REFERENCES

- [1] Diamond, J. 1998, *Guns, Germs and Steel: A short history of everybody for the last 13,000 years*, Vintage, Random House, Sydney
- [2] Alexandra, J., Haffenden, S. and White, T. 1996, *Listening to the Land: A Directory of Community Environmental Monitoring Groups in Australia*, Australian Conservation Foundation, Melbourne
- [3] Hollings, C.S. (ed), 1978, *Adaptive Environmental Assessment and Management*, John Wiley and Sons, London
- [4] Rose, DB editor 1995 *Country in flames* North Australia Research Unit Australian National University
- [5] LWA (Land & Water Australia), 2001, *LWA Five year strategic plan 2001-2006*, LWA, Canberra p.9
- [6] Keating, B. and Harle, K. 2004, *Farming in an Ancient Land- Australia's journey towards sustainable agriculture*, ISCO 2004- 13th International Soil Conservation Organisation Conference- Brisbane, July 2004, p.6

- [7] Campbell, A. 1995, *The Natural Country*, Centre for Resource and Environmental studies, ANU, Canberra, p.1
- [8] Walker J., Williams B. and Ive J., 1989. *The Effect of Tree Removal and Afforestation on Dryland Salt Distribution in the Murray-Darling Basin*, CSIRO.
- [9] NLWRA (National Land and Water Resources Audit) 2005, website, <http://www.nlwra.gov.au/> (accessed 18th March, 2005)
- [10] Stirzaker, R., Lefroy, T., Keating, B. and Williams, J., 2000, *A Revolution in Land Use: Emerging Land Use Systems for Managing Dryland Salinity*, CSIRO, Canberra
- [12] Keating, P.J. 2002, *The Third Annual Manning Clark Lecture* National Library of Australia, 3 March, 2002, p.10.
- [13] McCalman, Why Australia should invest in Education, 10 August 2002 quoting Darwin 1836, "The Voyage of the Beagle", The Age Melbourne
- [14] Taylor, G. 1940, *Australia – a Study of Warm Environments and their Effect on British Settlement*, Methuen and Co, London
- [15] Lines, J. 1994 *Taming the Great South Land: A History of the Conquest of Nature in Australia* Penguin Books Melbourne
- [16] Gleeson, T. and Piper, K. 2002, *Institutional Reform in Rural Australia: Defining and Allocating Property Rights*, Synapse Research and Consulting
- [17] DAFF (Department of Agriculture Fisheries and Forestry) 2003, *Australian Agriculture, Fisheries and Forestry: At a glance 2003*, Commonwealth of Australia, Canberra.
- [18] NLWRA (National Land & Water Resources Audit), 2002, *Australian Terrestrial Biodiversity Assessment 2002*, NHT Commonwealth of Australia
- [19] Reid, J. W., 2000, *Threatened and Declining Birds in the NSW Sheep-Wheat Belt*, CSIRO Sustainable Ecosystems, Canberra
- [20] Campbell 1994, *Landcare* Penguin Books Melbourne

- [33] SoE (State of Environment) 1996, *Australia: State of the Environment*, Commonwealth of Australia, Canberra
- [25] NSW Government 2003, *Native Vegetation Act 2003*,
<http://www.legislation.nsw.gov.au/fullhtml/inforce/act+103+2003+FIRST+0+N>
- [26] DSE (Department of Sustainability and Environment) 2004, *Securing our Water Future Together*, Victorian Government White Paper, East Melbourne.
- [27] Alexandra, J. 1995, “Bush Bashing”, *Habitat*, Australian Conservation Foundation, Melbourne
- [21] Industry Commission, 1998, *A Full Repairing Lease - Inquiry Into Ecologically Sustainable Land Management*, Report No. 60, Commonwealth of Australia, Canberra, p.5
- [22] LWA (Land and Water Australia) 2002, *Climate Variability in Agriculture*, website, <http://www.cvap.gov.au/> (accessed 18th March, 2005)
- [23] Cullen P. 1998, *Water in the Australian Environment: Ecology, Knowledge and Reform*, CRCFE, Canberra
- [24] Mackellar, D. 1987, *My Country and other poems*, Viking O’Neil, Ringwood.
- [25] Commonwealth of Australia, 1990, *National Drought Policy*, Drought Policy Review Taskforce AGPS, Canberra
- [26] Mitchel, A, 2004, “Survival of the Incompetent”, in the *Australian Financial Review*, October 9, 2004, p.54
- [27] PMSEC (Prime Minister’s Science and Engineering Council) 1996, *Managing Australia’s Inland Waters: Roles for science and technology*, Commonwealth of Australia, Canberra,
<http://www.dest.gov.au/archive/Science/pmsec/14meet/inwater/execform.html>
(accessed 24th March 2005), p.1

[28] Hooper, I. 2000. 'The Interpretation of Documents and Material Culture' in Denzin, N. & Lincoln, Y. (eds) *The Handbook of Qualitative Research*, 2nd edition, Sage publications, Thousand Oaks, pp 703-715 p 708

[29] IGBP (International Geosphere-Biosphere Programme) 2001, *Global Change and Earth Systems – A Planet under Pressure*, The International Council for Science C/o IGBP Secretariat, Royal Swedish Academy of Sciences, SWEDEN Website: <http://www.igbp.kva.se/>, foreword

[30] Mollison, B. 1988, *Permaculture, A Designers Manual*, Tagari Publications. Tyalgum, Australia,

[31] Weaver, P.; Jansen, L.; van Grootveld, G.; van Spiegel, E.; and Vergragt, P. 2000, *Sustainable Technology Development*, Greenleaf Publishing Limited, Sheffield, UK.

[32] Hill, S. B. 2002, *Redesign as Deep Industrial Ecology: Lessons from Ecological Agriculture and Social Ecology*, School of Social Ecology & Lifelong Learning, University of Western Sydney

[33] Keating, P.J. 2002, *The Third Annual Manning Clark Lecture*, National Library of Australia, 3 March, 2002, p.1.

[34] Keating, P.J. 2002, *The Third Annual Manning Clark Lecture*, National Library of Australia, 3 March, 2002, p.10

[35] Commonwealth of Australia 1993, *Native Title Act 1993*, [online] http://www.austlii.edu.au/au/legis/cth/consol_act/nta1993147/ (accessed 25 November, 2004)

[36] Brennan, F. 1998, *The Wik Debate: Its Impacts on Aborigines, Pastoralists and Miners*, UNSW Press, Sydney

[37] Commonwealth of Australia 2004, "Indigenous Land Rights and Native Title", *Department of Foreign Affairs and Trade website*, [online] Australian Government http://www.dfat.gov.au/facts/indg_landrights.html (accessed 1 December, 2004)

- [38] Johnson, A.K.L., Cowell, S.G., Loneragan, N.R., and Dews, G., 1999, *Sustainable Development for Tropical Australia*, LWA, Canberra
- [39] Conrad, P. 2004, “A nation of misfortune hunters”, in *The Australian*, newspaper, November 27, p.31.
- [40] Mulvaney, J. 1969, *Australian Prehistory*, Penguin Books, Melbourne, p.29
- [41] Folke, C., Carpenter, S., Elmqvist, T., Gunderson, L., Holling, C.S., Walker, B., Bengtsson, J., Berkes, F., Colding, J., Danell, K., Falkenmark, M., Gordon, L., Kasperson, R., Kautsky, N., Kinzig, A., Levin, S., Mäler, K., Moberg, F., Ohlsson, L., Olsson, P., Ostrom, E., Reid, W., Rockström, J., Savenije, H. and Svedin, U. 2002, *Building Adaptive Capacity in a World of Transformations*, Scientific Background Paper on Resilience for the process of The World Summit on Sustainable Development on behalf of The Environmental Advisory Council to the Swedish Government.
- [42] Katoomba Group 2004, *The Katoomba Group’s Ecosystem Marketplace*, website, online, www.ecosystemmarketplace.com (accessed 20th November 2004)
- [43] Abel, N. 2003, *Natural Values: Exploring options for enhancing ecosystem services in the Goulburn Broken Catchment*, CSIRO Sustainable Ecosystems, Canberra
- [44] Youl, R. 2002, “Private forestry vision 2050: A sustainable Australia achieved”, in *Australian Forest Grower*, autumn 2002, Vol 25, No.1, Liftout
- [45] Duke, J.A. 1990, “Promising Phytomedicinals”, in *Advances in New Crops*, Janick, J. and Simon, J.E. (eds.), pp 491-498, Timber Press, Portland, USA
- [46] Rosset, P. and Benjamin, M. 1994, *The greening of the revolution: Cuba’s experiment with organic agriculture*, Ocean Press, Melbourne.

[47] Michael, D. 2000, *New Pharmaceutical, Nutraceutical and Industrial Products*, RIRDC, Canberra

[48] Australian Wildlife Conservancy 2005, *website*,
www.australianwildlife.org (accessed 24th March 2005)

[49] Bush Heritage 2005, *website*, www.bushheritage.org (accessed 24th March 2005)

[50] Low, T. 2003, *The New Nature: winners and losers in wild Australia*, Penguin, Camberwell, Victoria.

[51] Pearson, N. 2000, The Light on the Hill, Ben Chifley Memorial Lecture, Bathurst Panthers Leagues Club, Cape York Partnerships 12/8/00,
<http://www.balkanu.com.au/people/noelpearson/lightonhill-12-8-00.htm>

[52] Whitehead, P. (in publication) *Feasibility of Local, Small Scale Native Plant Harvests For Indigenous Communities*, Northern Territory University, RIRDC <http://www.wildlife.ntu.edu.au/downloads/UNT.pdf> (accessed 24th March 2005)

[53] Geno, B. & Geno, L. (2001) *Polyculture Production – Principles, Benefits and Risks of Multi-cropping Land Management Systems in Australia* RIRDC 2001

[54] Mollison, B. 1988, *Permaculture, A Designers Manual*, Tagari Publications. Tyalgum, Australia,

[55] Industry Commission 1995 *Research and Development* Industry Commission Melbourne

[57] Reynolds, H. *The other side of the frontier* 1982 Penguin Books Melbourne.