



ABORIGINAL LAND USE

*This edited article is based on lecture notes from a presentation to Landscape Architecture, Planning and Design students at RMIT (University of Technology) Melbourne in March 1990, 91 and 92 as part of a course unit called Environmental Context. In presenting my version of the new conception of the aborigines as interventionist land managers, I used Odum's systems ecology framework to draw out some of the lessons for modern society. As with many other subjects on which I write, the ideas were developed in relative isolation from the new academic and scientific work which was being done in the field, so much so, that the notes for the first lecture had virtually no relevant references and it was only by referral from others that I discovered references which might give credibility to the ideas. Publication of Tim Flannery's **Future Eaters** has since raised these issues to public prominence.*



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INTRODUCTION

As we enter the final phase of industrial culture it is essential that we have the intellectual framework to comprehend the changes all around us and move towards appropriate new forms of society, technology and economy. Design will play a central role in this transformation. The permaculture concept of land use, developed by myself and Bill Mollison in the early 1970's uses design and ecology as its foundations.

The changes underway involve coming to terms with the limits to industrial culture. Some understanding of the means of existence of the 95% of humans who have existed on the planet over the million-odd years of human culture before industrial urban society, should prove useful in this task. The particular pattern of Australian hunter-gatherer society prior to the arrival of Europeans was the most durable example of human culture having spanned at least 40,000 years (through at least one ice age) on the driest and most infertile continent on earth.

In comparing and understanding the way of life before and after European settlement, land (or natural resource) use can be a good starting point. Ecology provides a framework and criteria for understanding hunter-gatherer and modern industrial societies and economies. Within this framework a deeper understanding of land use in the two cultures is then possible.

Ecological Comparison of Hunter Gatherer and Industrial Society

Factor	Hunter Gatherer	Industrial
Energy source	Solar (biological) resources	Biological and fossil fuels resources
Energy flow	Small proportion of energy flows (annual surplus) harvested for human needs	High proportion of annual flows plus capital stock harvested for human needs
Technology	Simplicity in technology and infrastructure	Complexity in technology and infrastructure
Economy	Steady state, domestic centred and small part of total culture	Global monetary economy based on continuous growth dominating other aspects of culture
Adaptability	Strong persistence of culture but great flexibility in face of external environmental change	Constant change in culture but critical dependence on continuity in external environmental conditions

GLOBAL INDUSTRIAL EXPANSION

From an ecological perspective, the major elements of global industrial urban culture were already established in western Europe at the time of Australia's colonisation. Colonisation was in fact one of the major elements of this new global culture. It is the pioneering edge or wave front of industrial society which moves across the globe, extracting resources and overwhelming indigenous peoples.

The decimation of the Celtic clan culture in the Scottish highlands¹ and takeover by sheep grazing enterprises to supply the English textile industry last century graphically illustrates that this wave was advancing on many fronts.

Today, the displacement and dispossession of the Amazonian and Indonesian indigenous rainforest peoples, is the last advance of this pioneering edge of global industrial culture: In these cases as their forests are converted into wood products for consumption in Japan, Europe, N. America and Australia.

ABORIGINAL LAND USE

Within this conceptual framework it is possible to make sense of Aboriginal land use patterns prior to white colonisation.

Aboriginal society made use of the whole landscape, though to varying degrees, with some areas heavily populated and managed while some areas (extensive rainforests) were virtual wildernesses. In Victoria the most extensive areas of rainforest occur on the Errinundra plateau in East Gippsland. This area was only populated by small groups of banished individuals from both the Gippsland and Monaro tribes. In Western Australia the tribes of the S.W. regarded the dense Jarrah and Karri forests as evil places to be avoided with only rarely used paths traversing them.

The most densely populated and used areas tended to have one or more of the following characteristics:

- High mineral fertility
- Moderate rainfall
- Edges along permanent streams, lakes, wetlands and coastlines as well as between major land systems supporting different food and other resources.
- Vegetation structure tending to open forest or woodland but with sharply defined edges of denser vegetation along gullies and other sheltered sites
- Pockets of elevated mineral fertility and organic matter.

1 MacKenzie, A. *A History of the Highland Clearances* 1883

While the first three characteristics may be seen as fixed aspects of the landscape even these changed quite dramatically over the long cultural memory which directed aboriginal land management. Ability to adjust to these changes with no substantial cultural changes evident in the archeological record is indicative of the great adaptability of the culture.

The last two characteristics were to a large extent a creation of land management practices over centuries. In fact it is appropriate to regard the landscape at the time of white colonisation as a cultural landscape well suited to human habitation rather than a wilderness. This is well support by historical and ecological evidence.

Some examples:

- The demise of some animal and plant species (eg. Hare-footed rock wallaby in N.T.) can be traced to the cessation of aboriginal management indicating long co-evolved dependence. The Hare-footed rock wallaby is now increasing in numbers with the revival of aboriginal style mosaic burning.
- Open woodlands where forest now exist (eg Piliga Forest in northern NSW)
- Very old large trees in areas where today periodic bush fires make the survival of trees beyond 200 years highly unlikely.
- Pockets of mature fire sensitive rainforests with fully developed soil profiles within fire prone landscapes (eg. Arnhem land, Wilson's Prom.)

EUROPEAN ATTITUDES TO ABORIGINAL LAND USE

A superficial assessment of the historical record suggests that early observers regarded the natives as disorganised foragers of the meagre sustenance available from a depauperate and hostile environment.

There is some truth that this was their understanding. Myopia on the part of the Europeans was natural enough for an invading dominant materialist culture trying to comprehend a subjugated and essentially non-material culture. In addition the early soldiers, convicts and bureaucrats were products of the newly emerging urban industrial chaos of late 18th century England. They were the first truly decultured people on earth, disconnected from nature. The foods they brought with them were products of industrial/ colonial culture (white flour, tea and white sugar), and their comprehension of land and nature was minimal. Is it any wonder they failed to understand the people or the cultivated landscapes they found in Australia?

However there are two other factors which complicate the picture.

Firstly, by the time any literate person recorded observations of the natives in particular parts of the country, the people were already suffering from the onslaught of infectious

diseases introduced by the Europeans. In many areas the diseases preceded the whites via infected aborigines.

Secondly, it was policy of the colonial authorities not to acknowledge that the natives “worked” the land because under English common law “working” the land by indigenous people was evidence of ownership in lieu of title documents. Many early settlers and other observers noted in quite matter of fact terms that the aborigines managed the land through deliberate use of fire and other means.

All this is rather ironic when one considers where and how exploration and settlement of the country by whites actually occurred. It was the amenable and accessible nature of the indigenous cultural landscapes and the often helpful local people which were critical to early success of the whites. Attempts at exploration and settlement of wild areas little frequented by aborigines generally ended in failure.

Pastoral grazing, particularly of sheep is well known as our greatest industry and that until recently Australia was said to ride on the sheep’s back. The pastoral wealth which was the economic base of the colonies before the gold rush represented a direct harvesting of the accumulated biological capital of the most productive of the terrestrial systems managed by aborigines, the fertile grasslands and open woodlands. In most grazing regions the final replacement of native pastures by sown and fertilised pastures has only been completed in recent decades. Aboriginal wealth has been, in a very real sense the source of our wealth. Widespread recognition that the balance of native pastures and the sheltering and soil maintaining native trees and shrubs which was found by the early graziers was in fact the optimal balance, has come very recently (through Landcare). More slowly dawning is the realisation that this balance was a culturally maintained one.

LAND MANAGEMENT PRACTICES

The seasonal movements of aboriginal groups followed specific and culturally-embedded patterns which allowed for the harvesting of food and application of management practices to the particular land system. Harvesting and management were often effected by the same activity done in (apparently) the most casual manner. Timing of these activities was determined by precise synchronous cues in the natural environment.

The major management tool used by aborigines to shape whole landscapes, make them habitable and comfortable places to live and most importantly, productive of traditional foods, was fire. Pre historian Rhys Jones coined the term “fire stick farming” to describe this land management process. There is considerable debate about the frequency and intensity of aboriginal burning, but there is substantial evidence that the net effect was far from random or chaotic. In fact I would say the landscapes Europeans found could not have evolved without great regularity and precision in the use of fire over thousands of years.

USE OF FIRE

It is my view that over much of Australia fire prone land systems such as heaths and grasslands were burnt as often (annual dry season) and as soon as they would burn. By this process only the driest sites would burn (generally northwest aspects and ridges with shallowest and lowest fertility soils). Gullies, southerly slopes and more fertile sites would act as fire breaks.

The effects of the fire regime were manifold:

- it created open accessible ground along all routes used to traverse the particular land system.
- it shaped mature trees creating nest hollows where burnt branches died back and base hollows which were used for shelter including ancient revered birthing trees.
- it stimulated the growth of lush green grass high in protein which attracted kangaroos and other herbivores, stimulated flowering in heath land plants (rich sources of nectar) and was frequently critical in stimulating germination, fruiting or tuber formation of a diverse range of food plants (orchids, yams and beans).
- it created, over time, an incremental decline in the mineral fertility and organic matter content of the soil with an associated ecological drift to more fire prone vegetation. Although this may appear to be a form of land degradation the nutrients lost from the burnt areas in smoke and water are mostly absorbed by unburnt areas adjacent and often down slope. Over time, these areas become more fertile with ecological succession to less fire prone rainforest type vegetation. Consequently these "islands" provided different food sources and habitat for food animals which utilised the seasonal productivity of the burnt areas.

CAMPSITE ENRICHMENT

A second land management practice which reinforced the patterns created by fire was camping at the same traditional sites. These sites were always subject to the most gentle fires which protected them from hotter fires and allowed the nutrient accumulation mentioned. By eating along the way but defecating around camps, hard seeded berries and fruits such as native cherry and kangaroo apple were casually planted. Over time selection on the basis of sweetness and size as well as ability to use the elevated fertility of the midden site produced improved strains similar to cultivated varieties of fruit developed by agricultural people.

Collected and hunted food brought to camp for preparation and consumption obviously contributed to nutrient accumulation at middens. Black soil profiles up to 3m deep under

middens on otherwise low fertility sand 150 years since these were last used, testifies to the substantial and permanent changes created by these habits. Historical and ecological evidence suggest these sites were gardens of selected food plants growing in ancient fire-free, closed canopy groves within otherwise open country.

CULTIVATION

A third management technique was the disturbance created during digging to harvest important tuberous rooted staples such as Myrnjong or Yam Daisy. By digging to harvest yams, crowding which would otherwise limit growth was avoided. Introduction of food species to other suitable sites has also been recorded.

AQUACULTURE

Aboriginal use of aquatic food resources is well known and the most extensive midden sites are often located adjacent swamps, estuaries and rivers. Substantial structures described as fish traps were common up the Murray river before they were blasted to allow passage of boats. What is less well known is that these structures were also used to culture fish by separation of young from adults and predators from prey. While the european invaders had a natural understanding of the use of the grassland ecosystem by grazing stock, they had no cultural experience of the use of wetlands to culture food resources [aquaculture].

LESSONS FOR US FROM ABORIGINAL LAND USE

This new view of aboriginal land use has substantial implications for Australian society in the post-industrial era.

Firstly, coming to terms with the past is an important aspect of forging a new future. Recognition that our wealth is largely a heritage of unsustainable exploitation of natural resources which were husbanded for millennia by the aboriginal stewards is important in that it may reduce our arrogance at being creators of our own affluence and puts into perspective land and other claims by the descendants of these stewards. Learning to own the barbaric genocide which is part of our heritage without counter productive personal guilt is important. At the same time it is essential that we recognise that the process is continuing on the last frontiers in the tropical rainforests of the underdeveloped world on behalf of the affluent [us] in the overdeveloped world.

Secondly, the view that arises from a reaction against industrial culture sees nature as pristine and pure while humanity is a destroyer of nature. Implicit in this view is the assumption that we are separate from nature, the same assumption which sustains its ruthless exploitation. The heritage of aboriginal society and landscape shows us that being a part of nature does not mean passive acceptance of all elements of nature without intervention to direct and channel its forces for our long term benefit.

Thirdly, the changes which have been wrought on Australian ecosystems since white settlement have been so deep and fundamental that we should regard reconstruction of indigenous ecosystems to be, at best a form of gardening, rather than establishing self-sustaining nature. Without the original land managers and their “songs”, restoration of these ecosystems is futile dream. Remaining wilderness areas should be valued as exactly that, rather than representative of the environment in which aboriginal people lived.

Fourthly, forging sustainable patterns of land use in the post-industrial era will demand that we fully accept and make use of the foreign species we have introduced while learning to value and use the species and ecosystem fragments of the indigenous environment. This is beginning to be expressed by the current wave of interest in cultivation and selection of native food and fodder species as well as a review of the value of our native timber species. The emergence of a truly indigenous agriculture will take generations and will involve a fusion of our foreign and indigenous heritage.

Finally, the ‘greenhouse effect’ (climatic change) and other global environmental changes may force us to rapidly redevelop a flexible generalist culture and land use pattern, where aboriginal modes of behaviour, if not specific practices, will be the only survival option after the rapid collapse of our specialised industrial culture.

What is certain is that there are no more frontiers to exploit and that a sustainable economy on this driest and most infertile continent will demand that we invest the substantial wealth we have in repairing the productive capacity of the land. Without that urban culture will rapidly decay.

In the design professions, most of the present areas of work are at best irrelevant, at worst destructive. If we are to see an adaptive response to real issues then the focus for design will shift from the urban to the rural environment, from the built to the cultivated landscape, from creating new infrastructure and buildings to learning how to adapt and refurbish existing ones. Perhaps most important of all we will see a devolution of design skill from elitist professional practice for government and corporations to practical integration of design into all aspects of ordinary domestic, commercial and community life.

RECOMMENDED READING

Odum, H.T & Odum, E. **Energy Basis For Man and Nature** McGraw Hill 1981

Use of ecological and thermodynamic principles to provide an integrated understanding the physical foundations of the natural and human world. Puts environmental, economic, political and technological issues in a comprehensible context. This book is possibly the single most useful text I could recommend for understanding the world around us.

Mollison, B. & Holmgren, D. **Permaculture One** Tagari 1978

Along with the other permaculture books by Mollison and/or Holmgren, this first one explores the principles and some of the practices of sustainable land use for the post-industrial era.

Crosby, A.W. **Ecological Imperialism: The Biological Expansion of Europe 900-1900**

Cambridge Uni Press 1986.

Excellent ecological history of the biological sources of european success in N.America, S.America, Australia and N.Z. showing the importance of disease, weeds and pests along with domestic plants and animals.

Rolls, E. **A Million Wild Acres: Two Hundred Years of Man and an Australian Forest**

Nelson 1981.

Documents the changes in the natural environment and land use history of the Piliga Scrub since settlement. Includes excellent documentation of the emergence of massive forest regeneration on open pastoral woodlands last century to create the Piliga forest.

OTHER REFERENCES

Hallem, S. **Fire and Hearth** Aboriginal Studies Institute Canberra.

An excellent review of the historical evidence on the use of fire by aboriginals in the S.W. of Western Australia.

Jackson, W.D. **Ecological Drift: An argument against the continued practice of Hazard**

Reduction Burning in The South West Book: A Tasmanian Wilderness A.C.F. 1978.

A description of the concept of ecological drift in the context of S.W. Tasmania and the effects of burning, aboriginal and european.

Gee, H.M. **Aboriginal Man in The South West** Book

Refers to the journals of G.A. Robinson 1829-1834, a major source of original observation of the Tasmanian aborigines and the work of pre historian Rhys Jones who coined the term "fire stick farming"

Hynes, R.A. & Chase, A.K. **Plants Sites and Domiculture: Aboriginal Influence Upon Plant**

Communities in Cape York Peninsula in Archeology in Oceania 17{1}, 1982.

Gives ecological evidence for the creation of plant communities (gardens) at campsites by aboriginal people.

Rose, D.B. **Exploring An Aboriginal Land Ethic in Meanjin** vol.47 no.3 Spring 1988.

Excellent description of the use of the land by Yarralin people in N.T. and the contradiction between modern and aboriginal views of wilderness.