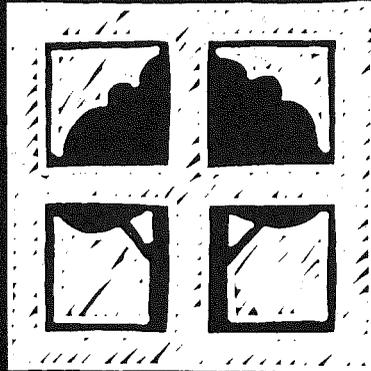




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ECONOMICS OF A LEVEL PLAYING FIELD: A COMPARISON OF URBAN BUSHLAND AND PARKLAND

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ABSTRACT

This paper outlines integrated management activities, including economic and social aspects, to highlight the importance of and need for appropriate bushland management in a modern Australian city. Kings Park and Botanic Garden will be used as a primary case study, with additional data from representative local government areas in Perth. The comparison provided may be useful for policy development in urban bushland management.

Kings Park and botanic Garden occupies 400 ha within walking distance of the Perth CBD. It overlooks the city and Swan River, and contains about 260 ha of bushland, 50 ha of lawn and parkland, 17 ha of botanic garden, 19 ha of arboreta, and the remainder infrastructure (roads, depot, nursery etc), leased areas (restaurant, cafes, tennis club) and a major water reservoir.

The Park is the State's most heavily visited tourist attraction, each year servicing about half a million adult Western Australian visitors, 200 000 adult interstate visitors and 200 000 international visitors. Taking into account repeat visitation per annum averaging three times, and the popularity of the Park with children as well as adults, total visitation is about five million per year.

The large area of bushland on the doorstep of the CBD is a very special attraction of Kings Park, and is Botanic Garden focussing on the rich Western Australian flora is of increasing interest. In 1993, a draft bushland management plan was released for public comment. Major management issues concern fire control, weed invasion and management, restoration of degraded areas, recreational use, and a growing demand for education, research and interpretation services associated with urban bushland.

Kings Park and Botanic Garden has developed new strategic directions and an organisational structure to give greater emphasis to integrated management of its bushland and parkland resources, and to enhance visitor services, education and conservation.

INTRODUCTION: ECONOMICS WITHOUT ECOLOGY

Unlike economics, ecological theory does not assume that the world is a level playing field. Ecology is fundamentally concerned with the diversity of life and environments, the dynamics within ecosystems,

the links between species and the changes that occur amongst these factors through time.

On the other hand, mainstream economic theory is based on homogeneity. The grassed, level playing field. Neoclassical economics, (the model of economic rationalists), assumes a single product, perfect substitutability between resources and perfect knowledge. Economic rationalists have no ecological dimension in their models. Their models are abstract and mathematically logical, but with no organic dimension or time scale.

Unlike economists, ecologists do not believe that the level playing field is an ideal type. Ecologists know that homogeneous ecosystems are less resistant to external impacts and less resilient to sudden changes or invasions.

Policies originating from economic frameworks based on the level playing field are conceptually sound, but ecologically unrealistic.

For many years, the incremental degradation of the environment could be overlooked or hidden by the marvels of progress. However, the continuance of environmental problems and increased ecological understanding indicates that this ignorance of ecological reality can no longer be perpetuated in policy formulation.

Two key issues emerge:

1. the policies emerging from level playing field economics do not provide appropriate policy for ecologically sustainable development
2. the level playing field economics has no tools for assisting with the management of natural bushland — urban or rural.

This paper presents a case for ecologists to reclaim economics and bring it back within the constraints of biophysical viability. It is a case for the development of an 'ecological rationalist' approach to urban bushland management.

ECOLOGY AND ECONOMICS

The level playing field of economics conflicts with ecology in two ways:

1. As a metaphor, the level playing field is not an ideal type for ecologists. Ecology recognises the need for diversity to provide resilience in an ecosystem and resistance to invasion from exotics. With the level playing field, you get a lawn culture. Clearly some

lawn is desirable, but as an ideal type, not only are they ecologically not viable, but they are energy and financial sinks. An article from the Lawn Institute in 'Garden Design' (Jun-Jul, 1994) states that in the U.S. an estimated \$30 billion a year is spent cultivating 50,000 square miles of lawn. The work of Bob Perry (Perry 1992) and others shows that from an energy inputs perspective, it is irresponsible to continue propagating lawns. The level playing field is not desirable.

2. From a policy perspective, the level playing field approach implies that, in a sort of *laissez faire* manner, the bush can look after itself. This is no longer true. The disruption of ecosystem dynamics caused by urbanisation, agriculture and invasion of exotic species indicates that urban bushland in particular needs protective management.

These two ecological implications suggest the inadequacy of level playing field economics. At the same time, ecology needs an economic theory for its management practices to determine priorities and allocate resources wisely. An economics that sits within ecological parameters is required.

Such an economics will provide management strategies, tools and policies to ecologists. As it stands, the influence of economic rationalism is counter-productive because economists are basing their approach on a view of the world that is not viable ecologically. The theoretical base is especially inadequate for native bushland management in the level playing field approach.

The question is, how can ecology and economics become united and work together in positive terms?

We propose that community values are central to achieving such an integration of ecology and economics. Economics provides a powerful tool for ordering value judgements. The challenge to ecologists is to recognise this and instill an awareness of ecological value systems into mainstream economic debate.

Kings Park has a relatively long and well-recorded management history, affording rare insights into how cultural values concerning Australian urban landscapes and bushland have changed. A brief history of management strategies utilised at Kings Park will, therefore, serve to illustrate how ecological values have gained increasing recognition and resulted in an integrated management approach.

The case is particularly pertinent because the

management of Kings Park requires balancing resources for conventional grassed parkland areas heavily used for recreation and tourism, against those needed for the conservation of Perth's most centrally accessible urban bushland.

BUSHLAND MANAGEMENT STRATEGIES: THE CASE OF KINGS PARK

Background

Kings Park is the jewel in Western Australia's urban reserve crown. Situated on the doorstep of the city centre, the Park offers panoramic views over the CBD, the Swan River and eastwards across the Swan Coastal Plain to the Darling Scarp. Occupying 400 ha, two thirds of which is bushland, a unique opportunity to experience wildflowers, recreational parkland, and bushland is afforded within walking distance of the CBD of a city of 1.2 million people.

The fresh water springs emanating from limestone at the foot of Mt Eliza were of fundamental importance to Aboriginal Nyungar people and European colonists. It is little wonder that the Mt Eliza precinct was protected in principle as public land from the outset by the Swan River Colony's first Surveyor General, John Septimus Roe, and formally gazetted as a reserve in 1872 to ensure that the urban sprawl of West Perth did not eat away the land in small increments. Two decades later, bushland nearer Subiaco and Crawley was added to the reserve, doubling its size to the present 1000 acres or 400 ha.

While the European colonists shared with the Nyungars an appreciation of the site as a strategic lookout and source of fresh water in a dry land, the bushland itself was perceived from vastly different perspectives. With more than 40 000 years of oral cultural tradition behind them, Nyungars saw themselves and the bushland as one, with the plants and animals each being part of life's rich spiritual and profane tapestry. From a purely utilitarian perspective, all life's worldly needs were to be found - food in the form of animals and plants such as bohn (*Haemodorum*) and mangyt (*Banksia nectar*), twine from *Dianella* leaves, fire-making materials and superglue from the balga (*Xanthorrhoea preissii*) etc. To the colonists, the bushland offered little and was an impediment to the establishment of European agriculture. The wildflowers were striking and beautifully coloured, and timber was useful (though with few softwoods amenable to axe and adze), but the bushland was generally regarded as "unalienated

wasteland", worthless and threatening.

The 'Kew Gardens' Approach: John Forrest

Kings Park was subjected to various extractive industries (limestone mining, timber and firewood harvesting) from the foundation of the Swan River Colony. Major parkland development began with the formal establishment of the Perth Park Board in 1895 under the Presidency of Sir John Forrest, Premier of Western Australia.

Under Forrest's stewardship, the bushland of the Park was pushed aside to make way for a Kew Gardens model English parkland, with associated road system and exotic horticultural styles, imposed initially on the old rifle range area in the Fraser Avenue precinct overlooking the city.

From a modern perspective, it is fortunate that park development funds were limited despite the financial boon of the 1890s Goldfields development. The major bushland areas nevertheless were penetrated by roads (May Drive, Forrest Drive, Lovekin Drive), and criss-crossed by innumerable tracks dating back to the active timber harvesting days by convict labour in the 1860s and 1870s.

Exotics and Bushfires: Kessel & Hackett

The planting of exotic trees (oaks, elms etc.) along these new roads was done by the Kings Park Board for "beautification", but not without protest by at least one Board member (Sir Winthrop Hackett).

As suburban Subiaco, West Perth and Crawley surrounded the Park, residents began to raise concerns about bushfire in the Park. The Board eventually succumbed to pressure, and implemented the cheapest perceived solution short of eradicating the bush - prescribed burning for fuel reduction on a three year rotation.

Moreover, in 1931 on the advice of the Conservator of Forests, S.L.Kessel, the Board commenced replanting burnt areas with eucalypts from eastern Australia (mainly sugar gums *Eucalyptus cladocalyx*), and continued the practice of removing the understorey shrubs and any timber that appeared dead (to be sold as firewood). By 1938, however, Kessel expressed concern to the Board at the level of clearing being undertaken after each fire.

This management approach inexorably led to

invasion of the bushland by exotic weeds, the most pernicious being veld grass, and created a more flammable understorey than the native plants that had been replaced. The changes in structure and composition of the flora and fauna became increasingly evident, particularly to botanical and zoological staff of the University of Western Australia who conducted teaching and research in the conveniently located Park bushland adjacent to the University campus from the 1930's.

The Emergence of Ecological Concerns: Main & Serventy

The concerns of the biologists were formally published in a significant paper in the *Western Australian Naturalist* (Main & Serventy 1957), but were received by the Board with some reluctance, particularly a suggestion that the Board should include among its members an ecologist able to help in ensuring the bushland was managed for nature conservation.

However, the Government of the day did respond favourably to proposals from several quarters during the 1950s that a State Botanic Garden should be established in Kings Park, focusing on the diverse Western Australian wildflower flora.

The Recreation Park: Swimming Pool & Botanic Garden

Another Government initiative, to establish a new swimming pool complex in the Park for the 1962 Commonwealth Games, led to great public outcry. This resulted in amendments to the Parks and Reserves Act requiring the Kings Park Board to seek the consent of both houses of parliament to establish an aquatic centre or orchestral shell or to lease any part of the Park, with the proviso that such consent "shall not be given if native flora is to be despoiled".

This issue enshrined in legislation the principal that the bushland of Kings Park was to be given the highest level of protection possible. Interestingly, despite such a clear legislative signal, the Board of the early 1960s prepared a poorly known Master Plan which took the view that the Park was for public recreation and not a nature reserve.

Then followed substantial clearing of bushland to make way for recreational parkland, a broadwalk vista and the 17 ha Botanic Garden. Financial limitations prevented the establishment of a second grassed vista. This major phase of development gave way to three decades of consolidation but very little

clearing of additional bushland.

Kings Park Bushland Management Plan, 1994

The Board of the early 1990s reaffirmed the view that remaining bushland should not be further cleared or degraded, and developed a Kings Park Bushland Management Plan, after extensive public consultation, that was adopted in April 1994. The Plan represents a significant philosophical shift in attempting to integrate management and conservation of the bushland with the traditional practices applied to adjacent recreational parkland within Kings Park.

The Plan will guide bushland management for 10 years, and aims to control invasive environmental weeds, feral animals such as foxes and cats and diseases such as dieback and canker, minimise the impacts of fire caused by the annual attention of summer arsonists, and restore degraded areas to indigenous native plants. The use of the bushland as a conveniently located educational and passive recreation resource is also emphasized.

The integrated bushland management plan requires both a solid foundation in ecological principles and matching financial strategies to ensure that the full spectrum of objectives are met. In short, a marriage of ecology and economics is required in the context of the uncertainty and change that pervades the real world of both disciplines at the current time.

Integrated Bushland and Parkland Management:

The new Board, established in June 1994, has commissioned a similar plan for the developed parts of the Park to establish a forward looking and integrated Park management vision. The dual planning approach signals perhaps for the first time that there is a perceived equality between the level playing field and urban bushland - bushland management is given equivalent status to recreational parkland management.

The challenge facing Kings Park and Botanic Garden is to translate this perceived equality into reality. Adequate resources for bushland management have to be found. This will be easier if the culturally-entrenched philosophy that recreational parkland and botanic garden management costs far more and should receive far more financial support than bushland management can be overcome.

The integrated management approach represents

a diversity of strategies, both ecological and financial, professional and community. It builds on a number of strategies inherited and recently developed by staff and the Board.

For instance, fortunately, the Park has always allocated resources to fire control, and the Board has been able to persuade Government in recent years that veld grass can be controlled with a grass-specific herbicide that harms very few native plants.

The bushland Management Plan will be implemented by various strategies including reallocating duties of staff, allocating research resources and appointing ecologically trained additional staff. The Plan incorporates involvement of volunteers such as the Friends of Kings Park, who have started a woody weed eradication program. The Plan also involves seeking corporate support. The Plan will allow Kings Park to have a demonstration effect. By developing a profile as a centre for urban bushland management, it will encourage community support for Government resources to be allocated towards fulfilling bushland management objectives.

Thus, while ecological principles and values underpin the Plan, its implementation requires resonant economic tools and approaches for success.

While management approaches for recreational parkland can draw on extensive experience dating back to the English landscaper, 'Capability' Brown, Australian urban bushland management is dealing with organisms and communities whose biology and critical ecological processes have barely been identified, let alone understood. This compels, of necessity, a strong research investment hand in hand with practical management attempts.

MANAGEMENT STRATEGIES: INTEGRATED MANAGEMENT

There is an economic dimension to the solution of environmental problems. Choices have to be made, values have to be applied. The 'viability' of a project needs to be considered in ecological terms rather than ignored or assumed to be a 'constant' factor. The challenge is to develop an economic theory that integrates management processes within an ecologically viable framework.

A full detailing of the sorts of tools needed is beyond the scope of this paper, but there are examples that can be used to illustrate the point.

For instance, accounting is a process of organising information to provide clear guidelines for management decisions. Bushland management requires organisation of data, selecting the relevant variables to be examined. It requires processes for monitoring the flows into and out of the bushland. It requires consideration of the future. The argument being put here is that we can effect the quality of the information that goes into a management process. Protecting and managing urban and other remnant bushland is dependent on the development of an ecologically based accounting framework.

Putting a value on an environmental attribute is always a difficult problem. However, accountants often impute values into the management process. It is a very plastic exercise. 'Goodwill', 'discount rates', 'capital values', 'provision for bad debts' are often imputed values having a profound effect on the health of the 'balance' sheet. We need a management approach that imputes values that are more ecologically sound.

Bushland management requires an analysis of inventories — the bushland (stock) on hand, so to speak. Bushland management requires an auditing process, a way in which the effect of management strategies can be assessed.

It is also relevant that, despite the apparent unproductiveness of the accounting and auditing functions, they are performed, nevertheless, as an acknowledged part of system management maintenance in the financial world. The same access to these functions should be available to bushland management. The functions have to be performed and they have to be paid for.

RECLAIMING ECONOMICS

The framework in which policy is developed needs to be made ecologically responsible. The lack of an ecological dimension in economic theory, (or at best the assumption that natural resources are constant) is no longer tenable. Ecologists need an economics that can help prioritise decisions in an efficient and sustainable way. Ecologists need to reclaim economics.

Luckily, there is more to economics than economic rationalism and more to economics than chrematistics, the term used by Aristotle to describe economic behaviour that concentrated only on the accumulation of money. Ecology and economics are not mutually exclusive. Good economic theory knows the value of preserving the productive capacity of the planet. Ecological sustainability is the basis for economic viability.

However, this process of reclaiming economics needs to be seen as part of the path to solution. It is not a question of rejecting economics out of hand, but rebuilding an ecologically responsible economics. In spite of its unrealistic assumptions, false metaphors and ideal types, economic rationalism is still a dominant method of ranking values for developing policies to assign resources.

In the first instance, reclaiming economics means scrutinising the underpinnings of economic theory and demystifying the concepts, terminology and tools on which the level playing field is based. For instance, the significance of economic variables needs to be understood: different interest rates, different discount rates or changing other criteria can yield dramatically different results when assessing 'viability'. For example, a discount rate of 2% devalues the resources available to the next generation by 50%. Similarly, the difference between economic terminology and the vernacular use of the same words needs to be considered. Price, cost and value have different and specific meanings in economic theory, whereas they tend to be acceptable substitute terms in the vernacular.

The second step is to apply ecological concepts to replace some of the unsustainable tenets of level playing field economics. Time frames that consider the time it takes for plants or trees to grow should be an integral part of the framework. Growth and expansion should be differentiated so that it is clear that economic growth means consolidation, not just expansion. The power of the geometric progression should not be underestimated, especially when calculating compound interest or discount rates. Finally, the concept of biological diversity should replace the level playing field as an analogy for sustainable economic activity.

Economics has nothing to fear from an integration with ecology. Both disciplines have a lot to gain from working with each other.

CONCLUSION

New economic concepts have to be developed to ensure the success of ecologically based management strategies for bushland. It is time for the emergence of an ecological rationalism that allows economics to accept the value of biological diversity and the necessity for policies that enhance ecologically sustainable development.

The world is not a level playing field. There is no

ecology in level playing field economics. But there is an economics in ecology and bushland management.

An integrated management approach provides the umbrella by which ecological knowledge can be applied to bushland conservation through the powerful tools of appropriate economics.

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