

Rewilding Tasmania's Lake Pedder: Past Loss as Nature's *Lex Ferenda*

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Abstract

Our understanding of the temporal dimensions of environmental law must improve in order to better comprehend why environmental law is often ineffective and to stimulate new approaches to its reform. This article is about one of these temporalities, as unveiled through a case study of Tasmania's dammed Lake Pedder. It evokes the importance of the past – in particular the need to restore and 'rewild' past ecosystems – as a basis for environmental policy. Unlike the dominant temporal orientation of environmental law that emphasises the future, as exemplified by its rhetoric about 'sustainable development' and 'intergenerational' responsibilities, the effective protection and sustainable utilisation of nature must also draw sustenance from the past and heal former losses. 'Rewilding' is a recent addition to the lexicon of environmental law that to some extent evokes this orientation. The Lake Pedder story provides insights into the challenges of effective rewilding and its implications for nature's *lex ferenda*.

I TEMPORALITIES OF ENVIRONMENTAL LAW

Healing past losses can be important for future environmental decisions. The imperative is articulated well by the iconic work of New York artist Alan Sonfist, who devoted much of his life to rehabilitating urban milieu through natural monuments in cities around the globe to commemorate their lost geography and natural history.¹ His genre began in the mid 1960s when he created, in cooperation with the Metropolitan Museum of Art and municipal planners, 'Time Landscape' in Greenwich Village, Manhattan. The project sought to recreate the ancient indigenous vegetation of New York, and Sonfist selected the plants (such as oak and red cedar) after conducting research and consulting with botanists. His efforts represented the process of nature reclaiming itself and reflecting the memory of the revegetated site. Sonfist thereby sought to demonstrate

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¹ Alan Sonfist (ed), *Art in the Land: A Critical Anthology of Environmental Art* (Dutton, 1983).

that humankind's survival depends on better understandings of the interdependence of culture with natural systems. He later repeated similar artistic projects in many other cities.

His remarkable artistic oeuvre reminds us of the temporal dimensions of our imprint on the environment and the importance of the past to guide future restorative actions, including those shaped by law. Time in all its dimensions is fundamental to human affairs and our environmental decisions. The temporalities of the past, present and the future, as well as the 'pace' of time and timing of actions, profoundly shape our relationships with the natural environment. This article concentrates on one extrapolation of these facets – reclaiming the past through 'rewilding'.

The story of Tasmania's Lake Pedder explains why our environmental *past* should be a beacon for forthcoming actions to promote sustainability, and to examine how the strategies of rewilding can reinvigorate environmental law for this goal.² The campaign to rewild Lake Pedder is part of a long history of wilderness conservation in Australian politics that makes it a seminal case study.³ The prevailing agenda of sustainable development (or sustainability), a hallmark of Tasmanian environmental legislation,⁴ is deficient because of its largely *future* orientation. This may lead us to ignore the need to tilt our gaze to the past in order to restore damaged environments where the present conditions are not 'sustainable'. Rewilding, as will be explained shortly, aims to let nature ultimately sustain itself rather than be sustained dependently by humans. Although the article's subject matter focuses on Lake Pedder, the issues are germane to a variety of other Tasmania environmental restoration challenges and controversies, notably the barren west coast mining landscapes such as at Zeehan, the denuded kelp marine forests off eastern and southern Tasmania, and many logged old growth forests. Other jurisdictions beyond Tasmania no doubt have similar or more environmental legacies to repair. A number of leading scientists in Tasmania are already advocating more effort to heal past losses on the island and other parts of Australia in order to sustain viable ecosystems.⁵

² This article does not examine all aspects of the Lake Pedder story, such as the politics of the Lake Pedder damming and the political obstacles facing environmentalists, a subject well examined by others: eg, Kate Crowley, 'Lake Pedder's Loss and Failed Restoration: Ecological Politics Meets Liberal Democracy in Tasmania' (1999) 34(3) *Australian Journal of Political Science* 409.

³ Gamini Herath, 'The Economics and Politics of Wilderness Conservation in Australia' (2002) 15 *Society and Natural Resources* 147; Jamie Kirkpatrick, 'Ecotourism, Local and Indigenous People, and the Conservation of the Tasmanian Wilderness World Heritage Area', (2001) 31(4) *Journal of the Royal Society of New Zealand* 819.

⁴ See, eg, *Environmental Management and Pollution Control Act 1994* (Tas) sch 1.

⁵ See, eg, University of Tasmania academics David Bowman, Chris Johnson and Menna Jones.

This article continues in this opening Part with a foray into the temporal dimensions of environmental law. Part II distils the problem of shifting environmental baselines, a temporal distortion that saps efforts to promote sustainability when prevailing environmental conditions such as flooded lakes are used as benchmarks for action. Part III looks at rewilding and the challenges of implementing it for environmental governance. The focus shifts in Part IV to Lake Pedder itself, the proposals to restore it and the connotations for environmental law. The article reflects briefly in Part V on the contours of a new *lex ferenda* for our natural environment.

Without apparent tangibility that can be felt or otherwise sensed in some way, the significance of time acts primarily as a marker of changes including environmental changes and those wrought by humankind. The concept of the 'Anthropocene Age' has entered our vocabulary as a potent epochal signifier of the dramatic environmental shifts that humankind is engineering on a global scale.⁶ Cultural and psychological filters heavily modulate our understandings of time and the changes it signifies. Historians, anthropologists, psychologists and other experts have theorised variant social constructions of temporality,⁷ elaborating several models the dominant of which is known as the linear progression of time. Linear progression implies that time's arrow is only forward, unaffected by the past.⁸ This is in contrast to its rival cyclical⁹ model of time that is associated with infinitely repeated events and processes, from seasonal weather changes to the life and death of individual creatures.⁹ But climate change, the Global Financial Crisis, the war on terrorism and other recent breakdowns in the narrative of enlightened progress, challenge the frequent association in modern life between the linear continuity of time and societal advancement. This scepticism is also often punctuated by increasing anxiety about a seemingly accelerating pace of time in our frenzied, globalised society. The tendency of technological innovations and economic globalisation to 'compress' time and accelerate its pace is one of the most dramatic temporal trends facing environmental

⁶ Will Steffen, Paul Crutzen and John R McNeill, 'The Anthropocene: Are Humans Now Overwhelming the Great Forces of Nature' (2007) 36(8) *Ambio* 614.

⁷ Penelope Corfield, *Time and the Shape of History* (Yale University Press, 2007); John Brough and Lester Embree (eds), *The Many Faces of Time* (Kluwer Academic, 2000); L. Nathan Oaklander and Quentin Smith (eds), *The New Theory of Time* (Yale University Press, 1994).

⁸ Peter Coveney and Roger Highfield, *The Arrow of Time: A Voyage Through Science to Solve Time's Greatest Mystery* (Ballantine Books, 1992).

⁹ Diane Owen Hughes and Thomas Trautmann (eds), *Time: Histories and Ethnologies* (University of Michigan Press, 1995), *passim*.

decision-makers where more careful and patient use of nature may be necessary for sustainability.¹⁰

Cultural institutions, from art to law, evoke and modulate understandings of these temporalities. Artists such as Sonfist can help depict and critique the diverse environmental timescapes upon which humanity plunders or tenders nature. Similarly does law, though its modalities – especially in environmental law – tend to be more complex and contentious because of the implications for political power and economic development. Law embodies numerous temporal features pertinent to environmental managers. It can suffer from temporal inertia because of the doctrine of precedent and the ‘path dependency’ that limits legal innovation: the resulting predictability and stability in the application of legal rules can delay important reforms for sustainability.¹¹ The principle of non-retroactivity, generally associated with the criminal law, can thwart accountability for past errors that enjoyed the imprimatur of legality.¹² Statutes of limitations, associated with the civil law, can undermine environmental justice for latent or distant harms by limiting the period to pursue legal action.¹³ The law also structures the timing of decisions: some decisions are hasty (eg, fast-tracking prestige economic developments such as dams)¹⁴ while others are problematically delayed (eg, legislating carbon emission cuts). Also, special rules can shield existing practices from legal transitions (eg, ‘grandfather’ clauses that protect historic polluters).¹⁵ Substantive legal rules also embody perspectives about time: some elongate our perception of it, disciplining decision-makers to think long-term, such as environmental assessment procedures for proposed projects, while other rules are more attentive to the past, as evident in designating national parks for wilderness conservation.

Several of these temporalities are involved in the story of Lake Pedder. Its flooding for a hydropower project in 1972 was one of Australia’s most environmentally scandalous developments. A 1973 federal inquiry

¹⁰ Thomas Eriksen, *Tyranny of the Moment: Fast and Slow Time in the Information Age* (Pluto Press, 2001); Luchien Karsten, *Globalization and Time* (Routledge, 2013).

¹¹ Oona Hathaway, *Path Dependence in the Law: The Course and Pattern of Legal Change in a Common Law System* (John M Olin Center for Studies in Law, Economics, and Public Policy, 2003).

¹² Charles Sampford et al, *Retrospectivity and the Rule of Law* (Oxford University Press, 2006).

¹³ Gary Milhollin, ‘Long-Term Liability for Environmental Harm’ (1979) 41(1) *University of Pittsburgh Law Review* 1.

¹⁴ In the case of the Lake Pedder, the relevant legislation to dam it – the *Hydro-Electric Commission (Power Development) Act 1967 (Tas)* – took just two days to pass through each of the two houses of the Tasmanian legislature.

¹⁵ Heidi Gorovitz Robertson, ‘If Your Grandfather Could Pollute, So Can You: Environmental Grandfather Clauses and Their Role in Environmental Inequity’ (1995-96) 45 *Catholic University Law Review* 131.

observed that 'the controversy over the flooding of Pedder has certainly been the most sustained, the most widespread and the most deeply felt, of any conservation issue which has yet arisen in this country'.¹⁶ This ignominious episode was not an isolated one for Tasmania, which has suffered a sequence of 'ecological and ethnological blunders' that began with the brutal warfare against its Aborigines in the early 1800s.¹⁷ During the twentieth century, a range of environmental losses unfolded, including in 1936 where there was the apparent extinction of Tasmania's biggest endemic mammal, the Thylacine, as well as more recent controversies over logging of old growth forests.

But past losses are not necessarily irreparable. From the immediate aftermath of Lake Pedder's flooding, proposals have been advocated for its restoration by removal or alteration of the dam. Such a measure may be a gesture towards 'rewilding'. The more familiar notion of 'environmental restoration' commonly centres on technical interventions such as remediating contaminated land or former mines without seriously questioning or displacing the human domination of nature in such places. Rewilding, on the other hand, is viewed by some as more ambitiously and holistically seeks to restore nature's integrity and sovereignty. It is about returning nature to its wild state to be governed by its own rhythms and temporalities. This may entail introduction of extirpated species, large-scale reforestation and removal of human infrastructure such as dams, roads and buildings that interfere with ecological processes.¹⁸ Rewilding looks to the past rather than the present as a baseline for such action. Although rewilding evokes the utopia of nature reclaiming its sovereignty and to be governed by its own processes, the transition to rewilding may require significant human intervention and assistance.

Rewilding does not necessarily mean removing human beings from rewilded areas; humans are also part of nature and our species has a lineage of several million years. Most parts of the world bear the imprint of some human habitation and modification. Australia, in particular, was heavily modified by many years of active land management by Aborigines, who utilised fire to manipulate vegetation in order to maximise biodiversity and abundance of prey species. However, in rejecting the false dichotomy of nature versus humans, we should be cautious to avoid any connotations that this excuses past or future

¹⁶ Lake Pedder Committee of Enquiry, *The Future of Lake Pedder Interim Report* (Australian Government Publishing Service, 1973), 26.

¹⁷ Cristina Mittermeier, 'Conservation Photography: Art, Ethics and Action' (2005) 11(1) *International Journal of Wilderness* 7, 11.

¹⁸ Michael Soulé and Reed Noss, 'Rewilding and Biodiversity: Complementary Goals for Continental Conservation' (1998) 8(3) *Wild Earth* 18, 22.

environmental losses. Rewilding affirms that humankind is part of the community of nature, not its master.

Rewilding and other curative actions that are staged across vast time scales can be difficult for environmental law to address. Environmental law may insouciantly overlook slow and temporally-distended impacts where the causes and consequences of ecological changes are seemingly disconnected.¹⁹ Climate change may take many decades or centuries to inflict mayhem, rather than spectacularly erupt to jolt our complacency. Even the worst environmental catastrophes of the late twentieth century – at Bhopal in 1984 and Chernobyl in 1986 – leached a poisonous fallout beyond time horizons that allowed those responsible to largely defuse and evade victims' claims.²⁰

Another temporal frailty of law is its approach to the past. While humankind can slavishly revere its customs and traditions, in an environmental context the past can readily be marginalised as an historic curiosity, set aside in quaint parks or dusty museums. The protection of World Heritage areas, of which Tasmania has several, is perhaps the context in which humanity's culture and nature is most seriously appreciated and respected. Although World Heritage areas represent a relatively small portion of nature's estate globally, a large portion exists in Tasmania. This bias is also egregiously evident in decision-making concerning sustainable development that tends to rely on current, impoverished environments as the baselines 'to sustain'. The scope to restore and return them to former, healthier conditions is thus ignored. While artists such as Sonfist 'can help us apprehend threats imaginatively that remain imperceptible to the senses because ... they are played out across a time span that exceeds the instance of observation of even the physiological life of the human observer',²¹ how can law similarly address such challenges?

Environmental law scholarship has theorised time incompletely while focusing heavily on the subject's spatial dimensions (eg, in the context of property rights, jurisdictional claims and the physicality of ecological problems).²² To the extent that it prioritises time, environmental law tends

¹⁹ Barton Thompson Jr, 'The Trouble with Time: Influencing the Conservation Choices of Future Generations' (2004) 44 *Natural Resources Journal* 601.

²⁰ Robert Hernan, *The Borrowed Earth: Lessons from the Fifteen Worst Environmental Disasters Around the World* (Palgrave Macmillan, 2010).

²¹ Rob Nixon, *Slow Violence and the Environmentalism of the Poor* (Harvard University Press, 2011) 15.

²² Bernhard Grossfeld, 'Geography and Law' (1984) 82 *Michigan Law Review* 1510; Jane Holder and Carolyn Harrison (eds), *Law and Geography: Current Legal Issues* (Oxford University Press, 2003) vol 5; Robert Verchick, 'Critical Space Theory: Keeping Local Geography in American and European Environmental Law' (1999) 73(3) *Tulane Law Review* 739; David Grinlinton and Prue Taylor, *Property Rights and Sustainability* (Brill, 2011).

to do so narrowly around a 'present future' orientation,²³ namely, examining how our present actions may have future effects such as the impact of carbon emissions on global warming and the consequences for posterity.²⁴ The sustainable development ideal, environmental governance's preeminent norm and temporal ballast, reinforces this future bias with the aim of ensuring justice to future generations.²⁵ This temporal dimension is particularly evident in the burgeoning literature by philosophers advocating for long-term thinking and mitigation action to curb climate change.²⁶ The philosophy of sustainability thus focuses on avoiding risks of future harm, mitigating impending damage and other prospective actions. The associated precautionary principle also brings an important temporal dimension to environmental law, though here again the focus is prospective rather than retrospective (ie, the aim is to foster cautious decision-making that avoids or limits future environmental harm). In downplaying the past, among relevant temporalities, the 'present future' perspective does not give society enough temporal depth to understand and resolve anthropogenic myriad ecological changes.

II PAST LOSS AS FUTURE INSPIRATION

Among the various timescapes relevant to managing our biosphere, this article focuses on the legacy of past environmental losses in guiding current and future decision-making. The argument is that we need to act not only prospectively but also *retrospectively*; or to put it differently, to look backwards before stepping forwards. Law must be imbued with a deeper appreciation of environmental history and the massive changes and injuries wrought by previous generations. The scholarly discipline of history has dealt most directly with time and of change in human societies over time, and a substantial body of environmental history literature can help guide this task.²⁷ But much of this insight has yet to inform legal regimes, whose references to healing past losses may be limited to cursory statements about the value of ecological restoration or recovery

²³ Lisa Heinzerling, 'Environmental Law and the Present Future' (1999) 87 *Georgetown Law Journal* 2025; Daniel Farber, 'From Here to Eternity: Environmental Law and Future Generations' (2003) 2 *University of Illinois Law Review* 289.

²⁴ Edith Brown Weiss, *In Fairness to Future Generations: International Law, Common Patrimony, and Intergenerational Equity* (Transnational Publishers, 1989).

²⁵ Manila De Iuliis and Peter Brandon, 'The Time Horizon in the Evaluation of Sustainable Development' (2012) 6(3) *Journal of Civil Engineering and Architecture* 344.

²⁶ See, eg, Stephen M. Gardner et al, *Climate Ethics: Essential Readings* (Oxford University Press, 2010).

²⁷ See, eg, Tim Flannery, *The Future Eaters: An Ecological History of the Australasian Lands and People* (New Holland Publishers, 1994); Jared Diamond, *Collapse: How Societies Choose to Fail or Survive* (Viking Press, 2005); John McNeil, *Something New Under the Sun: An Environmental History of the Twenty-First Century* (W W Norton, 2001).

of endangered species.²⁸ When ecological damage accretes gradually or occurred a seemingly long time ago, the present generation may not appreciate the extent of past losses and thus the consequences of further degradation. Declines in fisheries, for instance, may seem worrying from the vantage of recent decades, but disastrous from a longer time frame over a century.²⁹ Furthermore, in trying to explain the aetiology of environmental decline, we tend to look at temporally proximate causes, when the main cause may be much older. Loss of biodiversity might be attributed to the presence of new invasive species, when in fact historic climatic shifts, which enable such intruders to thrive, may be a more salient explanation for declining indigenous species.

Environmental law must recover from the jaws of temporal amnesia the marginalised past, and harness it as an inspiration for future action. Memories of the past can help ensure comprehensive legal accountability for prior environmental harm and help substantiate a more robust benchmark for future decisions by recalibrating shifting environmental baselines. We cannot assume that sustainability is always achievable using prevailing environmental conditions as baselines for legal protections; attaining this goal may also require some backtracking to recapture prior ecological conditions. Lands may need to be replanted with trees, fish stocks replenished to their former riches, and landscapes cleansed of contaminants. As will be explained later in this article, historic baselines may more authentically represent the environmental conditions that need to prevail in order to conserve and sustainably use nature today and tomorrow. And as will be discussed shortly, rewilding speaks most directly to this task,³⁰ though its implications for legal governance have not yet been comprehensively mapped.³¹

The Lake Pedder story is a sobering illustration of these themes. Most Tasmanians alive today were born after 1972, when Lake Pedder was drowned. They have no first-hand experience of the original ecosystem, appreciating its beauty and significance only vicariously through photographs, paintings or stories passed down.³² Consequently, the current ambience of the flooded lake can easily be taken for granted as its 'natural' condition or baseline. The campaign to reclaim the area is not simply about reviving a place of superlative beauty; it is about setting an example for restorative justice to the environment to inspire others.

²⁸ See, eg, *Threatened Species Protection Act 1995* (Tas).

²⁹ Jeremy Hsu, *Overfishing Goes Back Centuries, Log Books Reveal* (25 May 2009), <<http://www.livescience.com/5445-overfishing-centuries-log-books-reveal.html>>.

³⁰ George Monbiot, *Feral: Rewilding the Land, the Sea, and Human Life* (Allen Lane, 2013).

³¹ Peter Burdon, *Exploring Wild Law: The Philosophy of Earth Jurisprudence* (Wakefield Press, 2011).

³² Nastaha Cica, *Pedder Dreaming: Olegas Truchanas and a Lost Tasmanian Wilderness* (University of Queensland Press, 2011).

The phrase 'shifting baseline syndrome' came from Daniel Pauly's seminal essay, 'Anecdotes and the shifting baseline syndrome of fisheries'.³³ It refers to how successive generations of people – specifically resource users, scientists, and natural resource managers – fail to recognise the way ecological conditions once were, using the state of the ecosystem as it was during their lifetimes (or at the start of their careers) as a baseline from which to assess and compare subsequent changes.³⁴ Pauly's concern was fisheries management, but his theory is applicable to other environmental contexts. Its pernicious effect is to accelerate stagnation of ecosystems as cumulative past losses are ignored.

According to Sarah Papworth, the shifting baseline syndrome can be distilled into two distinct temporal categories: generational amnesia and personal amnesia. The former occurs where each successive generation forgets past ecological conditions existing prior to their lives, and fails to pass on their knowledge of ecological conditions to future generations.³⁵ Personal amnesia entails a more individualistic memory lapse, whereby someone fails to remember ecological conditions as they existed within his/her lifetime, instead believing that present conditions have always prevailed. Personal amnesia operates to shift human perceptions of the environment on a shorter time-scale than generational amnesia, yet they are still both influential in distorting our mental perceptions of ecological conditions. James Bohnsack argues that individuals may adjust to a resource-scarce world where they have lowered expectations about the productivity of ecosystems. In other words, the shifting baseline syndrome can dissuade people from accepting that stricter environmental measures are a viable or necessary policy response.³⁶

Many scientists recognise that baselines have already shifted, and are shifting, in numerous ecosystems around the world.³⁷ Highly resilient biomes can absorb external jolts, yet a sapping of resilience might enable negligible external events cumulatively to cause regime shifts. Over time, human activities can chip away at ecosystem resilience, through both top-down and bottom-up impacts, ranging from the overexploitation of top predators to the discharge of pollutants.³⁸ Tasmania itself, an island often lauded for its scenic beauty, wilderness and other superlative

³³ Daniel Pauly, 'Anecdotes and the Shifting Baseline Syndrome of Fisheries' (1995) 10(10) *Trends in Ecology and Evolution* 430.

³⁴ *Ibid.*

³⁵ Sarah Papworth et al, 'Evidence for Shifting Baseline Syndrome in Conservation' (2009) 2(2) *Conservation Letters* 93, 94.

³⁶ James Bohnsack, 'Shifting Baselines, Marine Reserves, and Leopold's Biotic Ethic' (2003) 14(2) *Gulf and Caribbean Research* 1, 5.

³⁷ Carl Folke et al, 'Regime Shifts, Resilience, and Biodiversity in Ecosystem Management' (2004) 35 *Annual Review of Ecology, Evolution and Systematics* 557.

³⁸ *Ibid* 558.

environmental values, is no exception to these adverse environmental trajectories.³⁹

Some environmentalists have advanced the concept of 'rewilding' to describe an approach to reversing these trends. The following section examines the goals and methods of rewilding before considering its application to Lake Pedder.

III REWILDING

A *Definitions and Approaches*

The notion of 'wilderness' has a long pedigree in environmental law practice, emerging in the mid-nineteenth century when the first national parks were designated. As vast swathes of the planet have since been deforested, polluted or urbanised to make way for industrialised modernity, wilderness has shrunk drastically. Traces of persistent pesticides have been discovered in Arctic wildlife through the general dispersion of these substances, and remote parts of the oceans thousands of kilometres from human settlements are contaminated with thousands of plastic particles that have drifted along the currents. What is left has been mourned as just 'domesticated nature'.⁴⁰ Tasmania retains some of the world's relic wilderness, primarily in its southwest corner, an area of World Heritage status. But the region includes the inundated Lake Pedder, which points to the relativity about judgements of 'wilderness'.

A restorative movement to rewild Earth's damaged landscapes and oceans offers hope. While there is a long tradition of ecological restoration in environmental policy and management, in recent decades it has begun to be usurped by a more provocative ideal of 'rewilding'. Rewilding aims to restore ailing ecosystem functions and services, especially through the introduction of extirpated species and restoration of their habitat, in order to re-establish the 'wildness' of nature rather than just recovery of specific ecological services and functions.⁴¹ The movement seems to have begun with collaboration between environmentalists David Foreman and Michael Soulé in the late 1980s, when they established the Wildlands Project to foster scientific and strategic support for enlarged networks of wilderness regions.⁴² The Rewilding Europe Initiative, one prominent subsequent example, aims to 'restore missing species and function' to ten 100,000 hectare core areas

³⁹ State of the Environment Tasmania (16 November 2009) <<http://soer.justice.tas.gov.au/2009>>.

⁴⁰ Peter Kareiva et al, 'Domesticated Nature: Shaping Landscapes and Ecosystems for Human Welfare' (2007) 316(5833) *Science* 1866.

⁴¹ Soulé and Noss, above n 18, 22.

⁴² Chris Sandom et al, 'Rewilding' in David MacDonald and Katherine Wills (eds), *Key Topics in Conservation Biology II* (John Wiley & Sons, 2013) 430, 431.

by 2020.⁴³ Rewilding emphasizes the critical importance of keystone species, such as top carnivores, in regulating ecosystems, and accepts that these species require extensive terrain and habitat linkages ('corridors') in order to thrive.⁴⁴

Rewilding as a conservation policy is justified on three primary grounds. First, on a scientific basis as rewilding can aid in the restoration of self-regulating ecological communities. Major alterations in ecosystem function and structure resulted from the human-driven extinction of Pleistocene mega-fauna, for instance, triggering adverse disturbances and a chain of negative ecological effects. A related scientific argument is that restoring ecological functions can re-establish blunted evolutionary processes. The second ground has an ethical basis, affirming human responsibility to restore ecosystems that we have been complicit in damaging. The third ground is an aesthetic one, which identifies value in the aesthetic and emotional dimensions of wilderness, such as those evoked by the original Lake Pedder.⁴⁵

Various types or methods of rewilding have been applied or proposed. The translocation of species is one strategy, which may entail re-introducing an animal to an ecosystem from which it was extirpated. For example, in the mid 1990s the US Fish and Wildlife service restored gray wolves (*Canis lupus*) to Yellowstone National Park, releasing 31 wolves captured in Western Canada.⁴⁶ In the following decade, the wolf population increased significantly with a corresponding decline in elk numbers and improved plant regrowth because of fewer browsing herbivores.⁴⁷ The translocation of species may also be used to assist plants and animals threatened by climate change. Restoration of habitat through reforestation may also be necessary to accompany such efforts. One example is Trees for Life, a Scottish conservation charity dedicated to restoring a large contiguous area of the Caledonian Forest, located in the Scottish Highlands.⁴⁸ For a globally vanished species, it may be necessary to translocate approximate 'taxon substitutes' – such as by substituting an Asian species of camel for an extinct North American equivalent. One effort is the Pleistocene rewilding campaign that aims to

⁴³ See Emma Marris, 'Reflecting the Past' (2009) 462 *Nature* 30, 31; Sandom, above n 41, 439.

⁴⁴ Dave Foreman, 'The Wildlands Project and the Rewilding of North America' (1998) 76 *Denver University Law Review* 535, 548.

⁴⁵ *Ibid* 548.

⁴⁶ National Park Service, *Wolf Restoration* <<http://www.nps.gov>>.

⁴⁷ Patrick White and Robert Garrott, 'Yellowstone's Ungulates After Wolves: Expectations, Realizations, and Predictions' (2005) 125 *Biological Conservation* 141, 142.

⁴⁸ Adrian Manning, David Lindenmayer and Joern Fischer, 'Stretch Goals and Backcasting: Approaches for Overcoming Barriers to Large-Scale Ecological Restoration' (2006) 14(4) *Restoration Ecology* 487, 490.

translocate some African and Asian mega-fauna to parts of North America and Siberia that have evolved without these species since the Pleistocene era.⁴⁹ To date, Yakutian horses, muskox, European bison and elk have been successfully introduced.⁵⁰

Biotechnology is another rewilding tool. Artificial breeding methods can help re-create extinct species. An example is the Heck cattle, which were bred into existence by two German zoologists, Lutz and Heinz Heck, in the 1920s. The descendants of the Heck cattle nurtured by these zoologists were later integrated into a re-wilding experiment in the Netherlands, called the Oostvaardersplassen.⁵¹ Modern researchers are currently attempting to recreate the DNA of a number of other species, including the Tasmanian Thylacine.⁵²

Re-introducing species into novel ecosystems by the above means usually requires legally setting aside habitat, such as designating conservation parks and wildlife corridors. Some habitat areas may also be passively managed, with minimal human interference, in order to facilitate the natural succession and rejuvenation of forests and other natural locales.⁵³ This approach may be used in abandoned farmland or pastures.⁵⁴ It is evident in the New England region of the United States where forests have regrown following extensive clearing for agriculture in the eighteenth century.⁵⁵

In some cases, as suggested for Lake Pedder, rewilding may require removal of human infrastructure such as dams and roads. Dam removal helps to restore the natural hydrology of rivers and replenish rivers with fish and other aquatic species. Practical difficulties to implementing this method include the challenges inherent in engineering safe dam breaches, restoring ecosystems, and overcoming legal and political hurdles to dam removal. As Michael Blumm notes, 'some dam removal projects have

⁴⁹ Dustin Rubenstein et al, 'Pleistocene Park: Does Re-wilding North America Represent Sound Conservation in the 21st Century?' (2006) 132(2) *Biological Conservation* 232, 233.

⁵⁰ Pleistocene Park, *Pleistocene Park and the North-East Scientific Station*, <<http://www.pleistocenepark.ru/en>>.

⁵¹ Jamie Lormier and Clemens Driessen, 'Bovine Biopolitics and the Promise of Monsters in the Rewilding of Heck Cattle' (2013) 48(8) *Geoforum* 249, 253.

⁵² Helen Briggs, 'Tasmania Tiger DNA "Resurrected"', BBC News, (20 May 2008), <<http://news.bbc.co.uk/2/hi/science/nature/7408840.stm>>.

⁵³ Laetitia Navarro and Henrique Pereira, 'Rewilding Abandoned Landscapes in Europe' (2012) 15(6) *Ecosystems* 900, 904.

⁵⁴ *Ibid* 908.

⁵⁵ Alexander Plaff, 'From Reforestation to Deforestation in New England, United States' (2000) 2 *World Forests* 67.

proceeded relatively quickly from proposal to completion ... other projects experience conflict, political wrangling, and serious delay'.⁵⁶

Worldwide there is increasing lake and river restoration, often through the decommissioning of dams. In the United States, with approximately 75,000 dams, dam removal is now outpacing dam construction with about 40 ageing impoundments removed annually.⁵⁷ In 2011 the US federal government began removal of the controversial Elwha and Glines Canyon dams, located near the Olympic National Park in the state of Washington. These dams had blocked salmon passage to important spawning habitats and transfigured the river's hydromorphology to a significant degree.⁵⁸ The process has been drawn out since 1992 when, through the Elwha River Ecosystem and Fisheries Restoration Act, Congress authorised the government to purchase the Elwha and Glines Canyon dams and directed the Department of the Interior to completely restore the Elwha River ecosystem, including the removal of these dams.⁵⁹ While it is still early to discern major changes in the Elwha river ecosystem, scientists predict it will take approximately thirty years before the river's normal flows and sediment loads are restored.⁶⁰ Among other examples, in 1999, the Edwards Dam was removed from the Kennebec River in Maine, after the US government determined that the benefits of an unobstructed river exceeded the value of the dam.⁶¹

B *Rewilding Challenges*

Rewilding is controversial. Whether and how it differs from the more familiar concept of environmental 'restoration' has yet to be satisfactorily resolved, although it tends to imply a more ambitious and comprehensive agenda of environmental recovery through the notion of 'wildness'. The terminology and purposes of these concepts certainly require more clarification from commentators and policy-makers. There are also disagreements about whether we can and should aim to restore ecosystems to a historic baseline state. The obstacles are seemingly multifaceted and significant, including how to account for the complexity of background change over time (given that ecosystems tend to be dynamic), the extent to which it is ever possible to return to a 'pristine' baseline state, and the difficulty of determining the actual biological

⁵⁶ Michael Blumm and Andrew Erickson, 'Dam Removal in the Pacific Northwest: Lessons for the Nation' (2012) 42(4) *Environmental Law* 1043, 1047.

⁵⁷ International Rivers Network, *River Revival. Dam Removal: The Global View* (1 February 2001) 2 <<http://www.internationalrivers.org/resources/reviving-the-world-s-rivers-4042>>.

⁵⁸ Blumm and Erickson, above n 56, 1051.

⁵⁹ *Ibid* 1046.

⁶⁰ *Ibid* 1058.

⁶¹ Jeff Crane, "'Setting the River Free": The Removal of the Edwards Dam on the Kennebec River' (2009) 1(2) *Water History* 131.

composition of past ecosystems. Furthermore, impending anthropogenic changes to the environment such as global warming may thwart re-creation of historic ecological conditions.⁶² There are also philosophical disputes about whether a desirable baseline state is one that pre-dates human intervention because it assumes that humans are ‘outside’ of nature.⁶³ This section examines some of these concerns, some of which are relevant to rewilding challenges in Tasmania given its long history of human occupation and modification.

Firstly, we have disagreement on identifying suitable environmental baselines for rewilding. Tony Pitcher and Daniel Pauly view environmental conditions before humans practiced large-scale agriculture as ideal,⁶⁴ whereas John Pinnegar and Georg Engelhard advocate pushing further back in time, since even some subsistence or artisanal resource uses millennia ago had detrimental environmental effects.⁶⁵ Karen Bjorndal and Alan Bolten assert that a baseline of pre-human or pre-historic times is a desirable target for the restoration of some species.⁶⁶ Such baselines might be inappropriate for Australia including Tasmania, where some 50,000 years of active land management by Aboriginal peoples, particularly through use of fire, fundamentally altered the pattern vegetation and biodiversity of the continent.⁶⁷

Another scholarly debate concerns the extent to which baselines, once identified, can be restored. Pitcher and Jackson perceive the reconstruction of past ecosystems to be a viable and desirable management goal, but others dispute the feasibility of restoring baselines to a stable, singular, and ‘equilibrium’ state. C S Holling and others portray ecosystems as ‘complex, non-linear, multi-equilibrium and self-organizing ... permeated by uncertainty and discontinuities’.⁶⁸ Peter Alagona and others see difficulties in selecting a single moment in history for restoration programs, positing that ecosystems are fluid and ever-

⁶² Robin Craig, ‘Perceiving Change and Knowing Nature: Shifting Baselines and Nature’s Resiliency’ in Keith Hirokawa (ed), *Environmental Law and Contrasting Ideas of Nature: A Constructivist Approach* (Cambridge University Press, 2013) 1, 25.

⁶³ Lisa Campbell et al, ‘Beyond Baselines: Rethinking Priorities for Ocean Conservation’ (2009) 14(1) *Ecology and Society* 14.

⁶⁴ Tony Pitcher, ‘Fisheries Managed to Rebuild Ecosystems? Reconstructing the Past to Salvage the Future’ (2001) 11(2) *Ecological Applications* 601; Pauly, above n 32.

⁶⁵ Pauly, above n 32; John Pinnegar and Georg Engelhard, ‘The “Shifting Baseline” Phenomenon: A Global Perspective’ (2008) 18(1) *Reviews in Fish Biology and Fisheries* 1.

⁶⁶ Karen Bjorndal and Alan Bolten, ‘From Ghosts to Key Species: Restoring Sea Turtle Populations to Fulfill Their Ecological Roles’ (2003) 10 *Marine Turtle Newsletter* 16.

⁶⁷ Bill Gammage, *The Biggest Estate on Earth: How Aborigines Made Australia* (Allen & Unwin, 2011).

⁶⁸ CC Holling, Fikret Berkes, and Carl Folke, ‘Science, Sustainability and Resource Management’ in Fikret Berkes, Carl Folke, and Johan Colding (eds), *Linking Social and Ecological Systems: Management Practices and Social Mechanisms for Building Resilience* (Cambridge University Press) 342, 354.

changing entities.⁶⁹ Emma Marris makes similar assertions in contending that many environmental changes wrought by humans such as the spread of invasive species are relatively benign.⁷⁰ These considerations tend to lead to two options – to reject baselines altogether in favour of striving for a state in which biodiversity and ecosystem resilience are simply optimised,⁷¹ or taking a pragmatic approach that seeks functional equivalence (eg a restored wetland may be acceptable despite differences in its appearance, location and biodiversity if it can replicate most of the original ecological services, such as recycling of water and nutrients).

Much of the contentiousness on this subject has stemmed from grandiose plans for Pleistocene rewilding.⁷² Dustin Rubenstein and Emma Marris note that there may be serious ecological ramifications to introducing descendants or proxies of Pleistocene mega-fauna species into biomes where similar species have been extinct for millennia; native flora and fauna, as well as overall ecosystem functioning and health, could be negatively impacted.⁷³ Such species may either fail to survive in new environments, or adapt 'too well' to the detriment of other valuable species.⁷⁴ Reintroduced species could spread dangerous parasites and diseases to the ecosystems, disrupt food chains, or cause biogeographic assemblages and evolutionary linkages to interact in unexpected ways.⁷⁵ Additionally, Pleistocene rewilding schemes may require considerable financial and physical resources. Steps such as land acquisition and preparation, translocation, monitoring, protection and containment would be costly, and resources could be more efficiently spent on preserving existing environments elsewhere under pressure to prevent further losses.

Related to these considerations, environmental philosophers debate whether nature has 'intrinsic value' and to what extent that value is forever lost or diminished when it is tampered with and whether restoration efforts can suffice.⁷⁶ In many cases, similar to replacing a

⁶⁹ Peter S Alagona, John Sandlos and Yolanda F Wiersma, 'Past Imperfect: Using Historical Ecology and Baseline Data for Conservation and Restoration Projects in North America' (2012) 9(1) *Environmental Philosophy* 49, 50.

⁷⁰ Emma Marris, *Rambunctious Garden: Saving Nature in a Post-Wild World* (Bloomsbury, 2011).

⁷¹ Thomas Ankersen and Kevin Regan, 'Shifting Baselines and Backsliding Benchmarks' in Alyson Flournoy and David Driesen (eds), *Beyond Environmental Law: Policy Proposals for a Better Environmental Future* (Cambridge University Press, 2010) 53.

⁷² Steve Wolverton, 'The North American Pleistocene Overkill Hypothesis and the Rewilding Debate' (2010) 16(5) *Diversity and Distributions* 874, 875.

⁷³ Rubenstein, above n 49, 233; Marris, above n 70, 30.

⁷⁴ Christopher Smith, 'Re-wilding: Introductions Could Reduce Biodiversity' (2005) 437(7057) *Nature* 318, 318.

⁷⁵ Rubenstein, above n 49, 233.

⁷⁶ Robert Elliot, *Faking Nature: The Ethics of Environmental Restoration* (Psychology Press, 1997).

primeval, old growth forest with a regenerated young plantation, environmental science suggests that some ecological values cannot be restored or 'rewilded'. Some economists, by contrast, who believe that everything of value can be substituted with something of equivalent value, would accept that lost environmental values can be replaced, either with new imitations (eg, GMOs or plastic tress) or alternate values such as improved public infrastructure, health or education services.⁷⁷ This idea is epitomised by Lake Pedder: Tasmania's then Premier Eric Reece defended his plans for the dam on the basis that a new, enlarged lake would be just as scenic and more useful (eg, for fishing and boating).

Finally, we should note a related philosophical contention with rewilding about whether ecological systems 'naturally' include or exclude humans. The search for a natural baseline state pre-dating human intervention overlooks the potential 'naturalness' of human intervention in nature. Homo sapiens have been a presence for approximately 150,000 years and have occupied most of the planet for about the last 10,000 years. Any binary or sharp distinction between the 'human' and 'natural' world is problematic. This concern may have something to do with the theoretical orientation of many scholars in this area, who mainly come from a marine ecology background. According to Campbell, 'marine ecologists and conservationists can more easily place humans outside of nature, both for the obvious reason that humans cannot breathe unassisted in water and because the ocean is often characterized as a vast open-access resource where the tragedy of the commons plays out'.⁷⁸ In contrast to scholars such as Pauly, Pitcher and Jackson, who generally favour a human-free baseline, Berkes and Folke view 'social-ecological systems' as inclusive of both humans and non-human nature.⁷⁹ As already noted, in Australia the latter approach seems more justified given the role of Aborigines in land management over thousands of years. Nonetheless, rejecting the human – nature dualism from a philosophical perspective by itself does not yield any practical guidance on environmental protection and sustainable development. What is an appropriate human presence in the natural environment in any given application of rewilding or restoration will depend heavily on the specific circumstances of each landscape or ecosystem. In the case of Lake Pedder, as we will now consider, the appropriate baseline for rewilding is less contentious on environmental grounds.

⁷⁷ Reyer Gerlagh and B C C van der Zwaan, 'Long-term Substitutability between Environmental and Man-made Goods' (2002) 44(2) *Journal of Environmental Economics and Management* 329.

⁷⁸ Campbell, above n 63, 17.

⁷⁹ See Fikret Berkes and Carl Folke, *Linking Social and Ecological Systems: Management Practices and Social Mechanisms for Building Resistance* (Cambridge University Press, 1998).

IV LAKE PEDDER

A *The Damming*

Lake Pedder has a jarring dyadic quality, nested within one of Australia's most sublime wilderness expanses. Yet, it is scarred by an impoundment constructed to generate cheap electricity to modernise Tasmania's economy. It is situated in the southwest of the state, comprising a large reservoir contained by three dams – the Serpentine, Scotts Peak and Edgar dams – that were built in the early 1970s in a scheme known as the Gordon River Power Development Stage One. The name 'Pedder' was bestowed in 1835 by a surveyor in honour of John Pedder, the first Chief Justice of the colony (then named Van Diemen's Land). Though Lake Pedder and its surrounds is often described as 'wilderness', and in some ways still is despite the huge reservoir, the area was inhabited, as for the rest of Tasmania, by Aboriginal peoples until sometime in the mid 1800s when displaced by British colonists.

The flooding of Lake Pedder was astonishing given that it was sited within a state national park gazetted in 1955 (and in 1968 incorporated into a new and larger conservation reserve when the Southwest National Park was proclaimed). The original Lake Pedder was acclaimed as the jewel in Tasmania's southwest wilderness until its inundation in 1972. The dam was the single largest event loss of wilderness area in Tasmania's history, a tragedy that spurred the development of the modern environmental movement in Australia, especially in Tasmania, which a decade later was strong enough to halt another calamitous proposal – to flood Tasmania's Franklin River for a similar hydropower project.⁸⁰

Lake Pedder is or was an area widely acclaimed of outstanding ecological, geological and scenic value. Its most distinctive, evocative feature was its dazzling pink quartzite beach on its eastern edge with flanking sand dunes. It was a relic glacial lake without peer in Australia and has been described as a 'one of a kind, with no replicate in the southern hemisphere and probably on a global scale'.⁸¹ The lake is more than a just singular landform, but is nested within and linked to a wider geomorphological and biological community in the surrounding mountains, valleys and vegetation. The lake also was a sanctuary for a distinctive biota including endemic species such as galaxiid fish and

⁸⁰ Aynsley Kellow, 'Dispute over the Franklin River and South West Wilderness Area in Tasmania, Australia' (1989) 29 *Natural Resources Journal* 129.

⁸¹ Kevin Kiernan, 'The Geomorphology and Geoconservation Significance of Lake Pedder', in C Sharples (ed), *Lake Pedder: Values and Restoration* (University of Tasmania, 2001) 14, 45.

crustaceans.⁸² Its intoxicating beauty has inspired a number of writers, artists and bushwalkers who have paid homage to the area.⁸³ The original lake was approximately 10 km² and bounded by mountain ranges, button grass plains and large sand dunes. It occupied a shallow depression in the upper catchment of the Serpentine River on the northern flanks of the eastern end of the Frankland Range. It included a number of characteristic and dynamic landform features, such as a seasonal beach with sub-aqueous dunes resembling broad mega-ripples along its length, a lunette or lakeside dune, and a lagoon system in the lee of the northern section of the lunette. It was the only glacial outwash 'pond' in Australia, and, together with other local landforms, comprised a singular geomorphic community of extraordinary complexity and immense geoconservation and ecological significance. The United Nations Educational, Scientific and Cultural Organisation ('UNESCO') recognised such qualities when it deplored the impending dam 'as the greatest of ecological tragedy' since the European invasion of Tasmania.⁸⁴

In the mid 1960s the Hydro-Electric Commission of Tasmania ('HEC') (now known as Hydro Tasmania) unveiled plans to dam Lake Pedder as a part of a large hydro-industrialisation for the state. The power of the HEC as a surrogate arm of the Tasmanian government was evident in the close alliance between Tasmania's leader, Premier Eric Reece and Allan Knight, the HEC Commissioner, in advocating the damming of Pedder in order to boost power supply in the state so as to attract more energy-intensive manufacturing industry investment to the peripheral economy.⁸⁵ There was no environmental impact assessment of the proposed dam of the standard commonly found in modern environmental law. The state government also sought 'to limit public knowledge and foreclose public discussion of the proposal to flood Lake Pedder'.⁸⁶

Environmentalists voiced opposition as early as 1967 when the Tasmanian Government modified the boundaries of the Lake Pedder National Park that had protected the lake since 1955. The Lake Pedder Action Committee formed in 1971 lobbied the federal government to save the southwest wilderness. Unable to unseat the dogmatic Liberal-Labour support in Tasmania for the dam, environmentalists founded the world's first green party, the United Tasmania Group. The Pedder issue also led to the establishment of the South West Tasmanian Action Committee, the

⁸² Tein McDonald, 'Visions of Stream Restoration; The Need for Long-term, Big Picture Projects: Interview with Sam Lake' (2007) 8(1) *Ecological Management and Restoration* 5, 6.

⁸³ Tim Bonyhady, 'Lake Pedder 1871' (1993) 55 *Island* 16; Cica, above n 32.

⁸⁴ Quoted in Kevin Kiernan, 'I Saw My Temple Ransacked', B Brown, I Lowe and C Milne (eds), *The Rest of the World is Watching* (Pan Macmillan, 1990) 20, 26.

⁸⁵ The Premier's enthusiasm for this and other hydropower schemes earned him the nickname 'Electric Eric'.

⁸⁶ Lake Pedder Committee of Enquiry, above n 16, 11.

forerunner to the Tasmanian Wilderness Society.⁸⁷ In 1973, the newly-elected Whitlam government's attempt to intervene was unsuccessful. Its ministerial inquiry into Lake Pedder recommended a moratorium on the flooding and consideration of an alternate, less environmentally-destructive hydro-power scheme, such as a canal that would channel waters around rather than through Lake Pedder. It was an idea rebuffed by the recalcitrant Tasmanian Labor government.⁸⁸ The lake was flooded in 1972-1973 and now is submerged in the Huon-Serpentine impoundment under about 16 metres of water that spans about 240 km², the largest freshwater lake in Australia.

B *Rewilding Lake Pedder*

The furore over the dam has tempered over the years, but some remain vigilant in pushing for the site's restoration, a place lauded by one such proponent as a 'latent phoenix beneath the waves'.⁸⁹ In 1973, literally as Lake Pedder was being flooded, a committee was appointed by the federal Minister for the Environment to report on circumstances surrounding the flooding of Lake Pedder and to advise on its future including restoration of the original site.⁹⁰ The Tasmanian government refused to cooperate with the inquiry, which concluded in favour of a moratorium on development with a view to restoring the original Lake Pedder, with costs to be borne by the Commonwealth. The impounded area was in 1982 included within the Tasmanian Wilderness World Heritage Area apparently because UNESCO (which administers the World Heritage Convention) had faith in the eventual restoration of the lake. In 1994, a campaign group was formally convened called Pedder 2000, proposing the draining and restoration of the lake to its earlier state. By 1995, the call for Pedder's restoration had attracted enough public debate and political legitimacy to induce the Australian House of Representatives Standing Committee on Environment and Heritage to commission an inquiry into the subject. Since then, an ongoing low-key campaign has been continued under the name of the 'Lake Pedder Restoration'.⁹¹

Calls for the restoration of Pedder have been rejected by Hydro Tasmania and the state's political elites on principally two grounds: firstly, the

⁸⁷ The loss of Lake Pedder was a turning point for the conservation movement in Tasmania and Australia, which became a better organised and more potential political force, as evident in its role in helping the federal Labour Party win the 1983 election on a commitment to stop the damming of the Franklin River.

⁸⁸ Lake Pedder Committee of Enquiry, above n 16.

⁸⁹ Peter Tyler, 'Lake Pedder: A Limnologist's Lifetime View', in C Sharples (ed), *Lake Pedder: Values and Restoration* (University of Tasmania, 2001) 51..

⁹⁰ Lake Pedder Committee of Enquiry, above n 16, 11.

⁹¹ See Lake Pedder Restoration Committee <<http://www.lakepedder.org>>.

financial costs associated with the removal work and the subsequent loss of hydro-electricity capacity; secondly, that the restoration is not ecologically feasible or environmentally necessary because the lake's beaches and sand dunes are now covered in layers of silt.⁹² A federal House of Representatives inquiry in 1995 into Pedder's loss concluded that the flooding was unjustified because of the destruction of a unique ecosystem. But because of the perceived high cost of the restoration and the lost energy, the inquiry did not recommend restoration,⁹³ concluding that: 'there would be a significant net cost to the Tasmanian community. It is opposed by the [Tasmanian] government and the major opposition in Tasmania and under these circumstances has no real prospect of proceeding in the foreseeable future'.⁹⁴

The case for restoring Pedder rests on a diversity of arguments. Initially, these emphasized aesthetic, ethical and scientific considerations, such as the area's beauty and wilderness values. Pedder's exquisite landscapes persist below the waters of the dam – the quartzite beach, the surrounding sand dunes and the lake's adjacent outlets,⁹⁵ and once the dam is removed or the impoundment waters lowered, the rewilding can largely be effected passively through 'natural re-seedling and recolonisation'.⁹⁶ Spurious claims in 1995 by a biologist that platypus were living in abundance in the enlarged Pedder waters were used as political ammunition by opponents of the restoration of the lake.⁹⁷ In fact, in 2008 scientists reported that the Pedder platypus population, as in other Tasmanian dammed waters, is contaminated with toxic chemicals (eg, polychlorinated biphenyls) used in the maintenance of hydro-dams and associated dam infrastructure.⁹⁸

In recent years rewilding proponents have added more pragmatic considerations, highlighting the economic and tourism benefits that would outweigh restoration costs and lost power.⁹⁹ The reduced hydro-electricity would perhaps amount to just five per cent of Tasmania's current

⁹² See Hydro Tasmania, *Gordon-Pedder* <<http://www.hydro.com.au/energy/our-power-stations/gordon-pedder>>.

⁹³ Australian Government House of Representatives Standing Committee on Environment, Recreation and the Arts, *Inquiry into the Proposal to Drain and Restore Lake Pedder* (1995).

⁹⁴ *Ibid* summary.

⁹⁵ Gabi Mocatta, 'Pilgrimage to Pedder', (2003) October – November *Australian Geographic* 86.

⁹⁶ Lake Pedder Restoration Committee, *Lake Pedder – The Case for Restoration* (April 2010) 2 <http://www.lakepedder.org/resources/Pedder_Case_For_Restoration.pdf>.

⁹⁷ 'Platypus and Lake Pedder', ABC Radio National (19 May 1995) <<http://www.abc.net.au/radionational/programs/earthbeat/platypus-and-lake-pedder/3649810>>.

⁹⁸ David Obendorf, 'Platypus and the Hydro', *Tasmanian Times*, (31 January 2008) <<http://www.tasmaniantimes.com/index.php/article/platypus-and-the-hydro>>.

⁹⁹ Lake Pedder Restoration Committee, above n 95.

electricity generation capacity.¹⁰⁰ The Lake Pedder Restoration group cites research from University of Tasmania academics that two-thirds of the state's annual power is consumed by just five major industrial facilities who pay less for their electricity than its cost of production and employ about 1400 workers (of some 240,000 workers in Tasmania).¹⁰¹

There is also a legal argument for restoring Lake Pedder. The Convention concerning the Protection of the World Cultural Heritage ('the Convention'), to which Australia is bound, requires State parties to restore and repair damaged areas. Unusually for environmental law, Article 5(4) of the Convention obliges parties 'to take the appropriate legal, scientific, technical, administrative and financial measures necessary for the ... *rehabilitation* of this heritage.'¹⁰² This reference to 'rehabilitation' also appears in several other articles of the Convention concerning the functions of the administering World Heritage Committee.¹⁰³ The Convention is implemented in Australia through the *Environmental Protection and Biodiversity Conservation Act 1999* (Cth) which obliges the government to prepare a management plan for each World Heritage site that fulfils Australia's treaty obligations.¹⁰⁴ Tasmanian legislation, such as the *Environmental Protection and Pollution Control Act 1994* also acknowledges briefly the importance of environmental restoration.¹⁰⁵ The Tasmanian World Heritage Area Management Plan developed by the state's Parks and Wildlife Service recognises the need to rehabilitate areas damaged by human disturbance as a priority, and identifies the restoration of Lake Pedder as an option. However, it cites the lack of state and federal government support for draining Pedder and drops the matter with no further discussion in its management plan.¹⁰⁶ The legislative mandate for rewilding Lake Pedder is thus clearly available – it is primarily a political obstacle to overcome.

The rewilding of Lake Pedder would need to begin with removal or lowering of one or more of the dams to which the impoundment is

¹⁰⁰ Interview with Adam Beeson, member of Lake Pedder Restoration (Hobart, 4 August 2014).

¹⁰¹ Jonathan West, *An Innovation Strategy for Tasmania: A New Vision for Economic Development – Conceptual Overview and Options Outline* (Department of Economic Development, Tourism and the Arts, 2009).

¹⁰² *Convention concerning the Protection of the World Cultural and Natural Heritage*, opened for signature 16 November 1972, 1037 UNTS 151 (entered into force 17 December 1975), art 5(4) (author's emphasis).

¹⁰³ *Ibid* arts 22–24.

¹⁰⁴ *Environmental Protection and Biodiversity Conservation Act 1999* (Cth) ss 316, 321.

¹⁰⁵ See, eg, *Environmental Protection and Pollution Control Act 1994* (Tas) sch 1, ss 3(d), (j), (k), which are part of the stated principal 'objectives of the resource Management and Planning System of Tasmania'.

¹⁰⁶ Parks and Wildlife Service of Tasmania, *Tasmanian World Heritage Area Management Plan* (Parks and Wildlife Service of Tasmania, 1999) 115.

connected. The principal liability is the Gordon River Dam, a behemoth structure soaring some 140 metres. The life expectancy of such a colossus is typically about one century, but extendable through care and reinforcement, or less without proper maintenance.¹⁰⁷ However, environmentalists have generally not targeted the Gordon Dam per se because it can remain in place and continue to generate hydro-power while Pedder is restored by other means. A seemingly more viable option would be diversion outlets on the associated Serpentine and Huon River Dams, which are earth and rock-based structures. An alternative to removal of one or both dams would be to lower the height of the impounded waters to a level to reveal the original Lake Pedder and some of its surrounding terrain. The latter two options would preserve a larger body of the impounded water and therefore entail less lost hydro-power.¹⁰⁸

The ensuing ‘recovery’ of the lake would have several dimensions, encompassing the lake itself, the associated beach and sand dunes, as well as the flora and fauna around the lake and the overall restoration of the area’s ecosystem. The federal Committee of Lake Pedder Enquiry concluded, in 1973 shortly after the inundation, that ‘there is, at this stage, a reasonable likelihood that the lake would recover acceptably. Full recovery may take a number of years for some components, such as trees’.¹⁰⁹ The group Lake Pedder Restoration believes that such a finding remains valid, though perhaps over a longer time frame.

V REFLECTIONS AND RECOMMENDATIONS

The campaign to restore Lake Pedder is fascinating for unveiling the potential of rewilding to become a beacon for future environmental law in Tasmania and other jurisdictions. But it also illustrates the difficulties – especially political – to successful rewilding. Rewilding also faces difficulties that inhere in the dynamic qualities of ecosystems, as recognised in the phenomenon of ‘shifting environmental baselines’ and if climate change intensifies there will be even more ‘shifting’. Yet, the Lake Pedder story is surely one situation where rewilding is possible because the goal involves a specific geographic site with a definite time marker – to remove a dam, eliminate any debris, replant trees and thereby allow nature to regenerate itself as it was before 1972. The task does not

¹⁰⁷ On dam longevity generally, see Martin Wieland, ‘Life-span of Storage Dams’ *International Water Power* (3 March 2010)

<<http://www.waterpowermagazine.com/features/featurelife-span-of-storage-dams>>.

¹⁰⁸ These options and other considerations are canvassed in Pedder 2000 (The Lake Pedder Restoration Committee), A submission to the members of the House of Representatives Standing Committee on Environment, Recreation and the Arts to inquire into the Proposal to Restore Lake Pedder, 13 February 1995.

¹⁰⁹ The Future of Lake Pedder Interim Report (1973), above n 16, 12.

require a herculean effort as in reviving an extinct species through bio-engineering or in displacing human settlement. Lake Pedder is in an area remote from most human activity and nested within a large wilderness area.

If rewilding is to succeed as a long-term pillar of environmental law and policy in a range of contexts beyond Lake Pedder, we must first identify the circumstances where it is feasible and the tools to implement it. This article thus concludes with some recommendations for such a legal framework, which should be a fundamental part of the natural environment's *lex ferenda*. The following remarks, although clearly warranting more extensive discussion in a separate article, are worthwhile to make initially in order to help spur debate on the broader significance of this case study for environmental law reform in Australia and other jurisdictions.

First, environmental legislation must elaborate better the meaning of 'restoration' or similar concepts found in their statements of purposes and functions. Statutory references to environmental restoration should outline the goals of such restoration, when and how it should be undertaken, and the relationship between restoration and the broader agenda of sustainable development. By clarifying terminology and goals, legislation can articulate more clearly and effectively the role of restoration and rewilding.

Second, environmental impact assessment law, as presently provided in Tasmania through the Environmental Management and Pollution Control Act of 1994 and some associated legislation,¹¹⁰ should be broadened from its present focus on predicting and mitigating future impacts to also examining and correcting past ecological impacts. This reorientation would mean better monitoring of the environmental impacts of previously approved developments to verify the anticipated effects (and to address unexpected adverse outcomes), as well as examining how any new development proposal under consideration could be redesigned or implemented to facilitate environmental restoration of past harm. In other words, any significant new economic development would be seized as an opportunity to heal mistakes of previously approved associated developments. To illustrate, a proposal to clear land for a new urban subdivision could be coupled with an assessment of how to offset that impact by rewilding other lands of at least comparable ecological value. Offsetting, although controversial when used as a ploy to allow for intensification of environmentally problematic development, may be useful as a rewilding strategy and implemented through the licensing process that accompanies environmental assessment of developments.

¹¹⁰ See, eg, *State Policies and Projects Act 1993* (Tas).

Offsetting, of course, should not be allowed for significant areas that are not substitutable, such as an old growth forest or a lake like Pedder that has taken millennia to evolve.

Third, the environmental assessment and licensing process must give much more weight to the precautionary principle, and curb development that risks irreparable, serious harm. Any anticipated, residual impacts allowed by regulators must be reversible. In other words, development should generally not be allowed when its environmental effects cannot later be overcome through restorative measures such as rewilding. The *reversibility* principle, as we should more accurately describe this goal, posits that human interference with the natural environment, such as the release of genetically modified organisms, new technologies or new infrastructure such as dams, should be engineered in a way to make it technically and economically feasible to remove them from the environment if unexpected or low-risk problems arise. Projects posing serious risks and ethical concerns, of course, should never be allowed at the outset. The reversibility principle should be applied cautiously to ensure that it does not become a pretext for business-as-usual, legitimating exploitation of nature on the assumption that any impacts can later be ‘reversed’.

To give effect to this orientation, planning law should also be amended so that the cost of such restorative work to reverse impacts is taken into account and developers should be required to set aside sufficient funds or insurance to make amends. The reversibility principle can also be incorporated within actual legal permissions for some development through a condition that the proponent eventually restores the affected site. Mining legislation already commonly reflects, in theory, the reversibility principle in provisions that mandate rehabilitation of former mining sites, such as by infilling, replanting and other restorative methods.¹¹¹ Already, as noted, this idea resonates to some extent in the precautionary principle, which encourages anticipatory action to avoid serious or irreversible damage to people or the natural environment.¹¹² Despite being widely acknowledged in environmental legislation in Australia and other countries, the precautionary principle has so far not been seriously incorporated into ideas about how to create legal frameworks to rewild the environment. (In fact, the precautionary principle has been used as a reason against rewilding because of the

¹¹¹ See, eg, Queensland Department of Environment and Heritage Protection, *Rehabilitation Requirements for Mining Resource Activities* (Queensland Government, 2007).

¹¹² Ronnie Harding and Elizabeth Fisher (eds), *Perspectives on the Precautionary Principle* (Federation Press, 1999).

supposed risks of reintroducing species or restoring landscapes that have long since been altered).¹¹³

Fourth, because it is important that rewilding be not constrained by a decision-making process that is triggered only when a new development is proposed, environmental law needs to create a process for proactively identifying areas suitable for rewilding and advising on methods to rewild. The former Resource Assessment Commission ('RAC'), a Commonwealth entity that conducted major public environmental enquiries in the early 1990s, is the type of institutional model that could support such a role.¹¹⁴ Rather than focus on specific development proposals, the RAC was mandated to investigate broad natural resources conflicts and other agendas on a regional scale.¹¹⁵ Its ability to gather and sift through diverse scientific evidence, consult with the public and make recommendations for government action, suggest this model could be useful for building a rewilding strategy over different ecosystems and regions in Australia. A further context for rewilding is land use planning and protected areas management. Crown lands and waters, both within and outside parks, should be managed with a legal obligation to rewild those places that can in fact be viably restored. Concomitantly, state and federal sustainability plans should include a restorative and rewilding strategy. At this level, rewilding can be enshrined as a meta-norm to guide all environmental law.

A further legal consideration is to determine the environmental baseline for restoration. As already noted in this article, there are inherent challenges in rehabilitating ecosystems to pristine states prior to the presence of humans, and indeed much of the Australian environment is a product of Aboriginal land management over millennia. Several scholars argue that environmental decision-makers should not strive to recreate static baselines but rather should take a more flexible approach to management, which acknowledges that change in nature is constant and inevitable. Carl Folke argues that we should adapt flexibly to changing environmental conditions, and respond effectively to uncertainty and surprise.¹¹⁶ An overarching goal of ecosystem management, according to him, should be to maintain the *resilience* of the targeted ecological system. Folke views resilience itself as a desirable benchmark, rather than

¹¹³ Tim Caro, 'The Pleistocene Re-wilding Gambit' (2007) 22(6) *Trends in Ecology and Evolution* 281, 281–82.

¹¹⁴ Established under the *Resource Assessment Commission Act 1989* (Cth).

¹¹⁵ See, eg, Resource Assessment Commission, *Coastal Zone Inquiry Final Report* (1993); Resource Assessment Commission, *Forest and Timber Inquiry Final Report* (1992). See further on the role of the Resource Assessment Commission and other such institutions, Benjamin J Richardson and Ben Boer, 'Contribution of Public Inquiries to Environmental Assessment' (1995) 2(2) *Australian Journal of Environmental Management* 90.

¹¹⁶ Folke, above n 37, 574.

a baseline state which existed thousands of years ago. He argues that a healthy and resilient state can be achieved by enhancing the diversity of functional groups in ecosystems, the diversity within species and populations, and the diversity of species within functional groups. This adaptive management approach stands in stark contrast to policies that aim to restore historic baselines, as advocated by Sala and Jackson.¹¹⁷ Folke's emphasis on ecosystem resilience however does not obviate the need for rewilding – indeed, it can precisely aid this goal.

I wish to suggest four criteria for determining an acceptable environmental baseline for rewilding efforts. First, it should be a baseline where there is adequate scientific knowledge, existing or obtainable through additional research, about past environmental conditions that can be acted upon. Second, it is necessary that there has not been irreparable damage ie, damage that cannot be reversed. Rewilding may thus not be feasible in established cities or in regard to species that have long perished without any salvable DNA. Rewilding will be most suitable for liminal spaces, situated between nature in its more primeval state and those already too disfigured by the Anthropocene. Third, restoration of the environmental baseline should likely enhance the resilience of the ecosystem so that it can sustain itself better without relying on humans to sustain it. Liminal spaces that are not wholly and irreparably transformed may be the ideal targets for rewilding. Fourth, rewilding should be economically feasible. This criterion is not about importing a problematic, rigid cost-benefit analysis that may underweight environmental values that cannot be quantified monetarily. Rather, it means that economic considerations based on a holistic assessment of nature's values at stake should be utilised as one factor in the basket of decision-making.¹¹⁸ Fifth, any social justice issues should be accommodated in making the transition to a rewilded landscape, such as financial compensation. These may be associated with workers whose economic livelihoods may be at risk, such as forestry labourers. For Aboriginal inhabitants of areas being rewilded, their active involvement in healing past losses may be indispensable to any strategy, especially landscapes that once evolved under their stewardship.

Restoring Lake Pedder passes these criteria. The damage to the lake is not irreparable, and there is quite good scientific knowledge about the area's environmental conditions now and before 1972. Removing the dam is technically feasible and it would strengthen the ecological integrity of

¹¹⁷ Enric Sala and Jeremy Jackson, 'Lessons from Coral Reefs' in Jeremy Jackson, Karen Alexander and Enric Sala (eds), *Shifting Baselines: The Past and the Future of Ocean Fisheries* (Island Press, 2011) 193.

¹¹⁸ Considerable literature in the field of 'ecological economics' addresses this challenge: see, eg, Richard Costanza et al, *An Introduction to Ecological Economics* (St Lucie Press, 1997).

Tasmania's southwest wilderness. The economic costs of removing the dam and the loss of hydro-power, although certainly not trivial, are justified not only for the restored ecosystem but also the additional economic benefits from increased eco-tourism to the region. The Lake Pedder and its surrounds are largely uninhabited. The current lake might not in itself be viewed as 'unsustainable' per se, but in combination with other dams, associated dam infrastructure such as roads, it is certainly environmentally problematic, in regard to introduced aquatic species, loss of large tracts of terrestrial habitat, and contaminants in the impounded waters. Unsustainability is often the product of many cumulative impacts.

Lake Pedder has become emblematic of many environmental losses. At stake is not just whether the dam should be drained but what its loss represents and what the contemporary lessons are for us and posterity are in making decisions about our precious natural environment. We should not be complacent that the ignominious story of Lake Pedder was an artefact of a bygone, irresponsible era that would not be repeated in our time. It could reoccur, as exemplified by the expedited approvals process for the controversial Gunns Pulp Mill planned for Tasmania's Bell Bay. The site had been classified under state national parks legislation as a Private Conservation Sanctuary since 1958, but in 2007 the Tasmanian State Government revoked it (a manoeuvre reminiscent of how Lake Pedder's national park status was modified to allow the dam project).¹¹⁹ And again, in 2014, the federal and Tasmanian state governments colluded in seeking to excise a tract of 74,000 hectares of forest from Tasmania's World Heritage-listed forests estate in order to open the area for logging.¹²⁰

For now, we can reflect on the original, sublime Lake Pedder vicariously, as immortalised through stories, photographs, paintings and other depictions. A recent such effort is the 3D visual recreation of the restoration of the Pedder landscape unveiled at Hobart's Museum of Old and New Art ('MONA') in August 2013.¹²¹ Of the many ways to appreciate its significance and beauty, many would regard Olegas Truchanas' haunting photographs of Pedder before the dam as the most evocative. It is worthwhile to close this article with his own words on why saving Lake Pedder matters:

¹¹⁹ *Nature Conservation Act 2002* (Tas) s 21.

¹²⁰ 'UNESCO Rejects Coalition's Bid to Delist Tasmanian World Heritage Forest', *ABC News*, 24 June 2014 <<http://www.abc.net.au/news/2014-06-24/unesco-rejects-bid-to-delist-world-heritage-forest/5538946>>.

¹²¹ Peter F, 'Media covers 3D Visualisation Launch Event' on *Restoring Lake Pedder: A Project for Tasmania's Future* (14 July 2013) <<http://lakepedder.wordpress.com/2013/07/14/media-covers-3d-visualisation-launch-event/>>.

Is there any reason why Tasmania should not be more beautiful on the day we leave it, than on the day we came? If we can revise some of our attitudes towards the land under our feet – if we can accept the role of a steward, and depart from the role of the conqueror; if we can accept the view that man and nature are inseparable parts of the unified whole – then a Tasmania that is truly beautiful can be a shining beacon in a dull, uniform and largely artificial world.¹²²

¹²² Olegas Truchanus, 'Shining Beacon' (Speech delivered at the opening of the exhibition 'Lake Pedder 1971', Saddlers Court Gallery, Richmond, 19 November 1971). Also, see the beautiful commemoration of his work in Cica, above n 32.