Critical Histories for Ecological Restoration

A thesis submitted for the degree of Doctor of Philosophy
of The Australian National University.

Lilian M. Pearce
June 2019

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Statement of Originality

I declare that this thesis is my own work, and that, to the best of my knowledge and belief, it contains no material previously published or written by any other person, nor material that has been accepted for the award of any other degree of a university or other institute of higher learning, except where due acknowledgement is made in the text.

Lilian M. Pearce 25 June 2019

Supervised by Prof. Libby Robin (Chair), Prof. Ruth Beilin & Dr. Cameron Muir.

This thesis is approximately 80,000 words, excluding footnotes and references. Short footnotes are used throughout, with a full bibliography provided at the end. References follow Chicago Manual of Style 17th Edition (note) and spelling follows Australian English.
For my family –

with love.
Acknowledgements

I begin by acknowledging the Traditional Owners of the unceded land on which this research was produced: the Taungurung (Kyneton, Victoria), the Wiljakali and Barkindji (Broken Hill region NSW), the Ngunnawal and Ngambri (ACT region), the Ngarigo (Monaro, NSW) and Yuin (Bermagui, NSW) peoples. I pay my respects to their Elders, past, present and emerging.

This project was built from strong relationships and generous dialogue. I take this opportunity to thank those who made it not only achievable, but joyous.

First and foremost, I acknowledge my supervisors Libby Robin, Ruth Beilin and Cameron Muir. As chair of my panel, Libby provided unwavering care throughout the four years of PhD life, while liberally imparting her extensive intellectual wisdom. Libby, Ruth and Cameron each graciously challenged disciplinary boundaries and afforded me complete creative freedom. I thank them for their encouragement, expert guidance, trust and friendship. They are the pillars of this project.

The stories in this thesis are those of real places and real people, to whom I am indebted. In particular, I thank those who opened doors and assisted me in the field: Paul Adcock, Rick Ball, Ann Evers, Bruce Green, Tein McDonald (and the AABR team), Susan Thomas and The Broken Hill Outback Archives staff in Broken Hill; Aileen Blackburn, Josh Dorrough, Annabel Dorrough and the Massy, Watson-Turley and Wilkinson families in the Monaro, and Garry McKechnie, Annie Ray, Alan Ray and the Bermagui Historical Society staff in Bermagui.

Thank you to my readers—my supervisors—as well as Will Bakes, Margaret Cook, Ella Furness, Pete Hay, Kerry Nixon, Joan Pearce, Kate Stanton and Tony Stoneham. Kate Stanton assisted with transcription. Thoughtful editorial, reviewer and examiner comments improved parts of this work.

My interests and ideas are sustained by a warm and expansive academic community. I particularly want to acknowledge: the La Trobe University environmental history group, especially Katie Holmes, Susan Lawrence, Kerry Nixon, and Clare Wright; the wide-reaching Australian environmental history community, especially Alessandro Antonello, Andrea Gaynor, Heather Goodall, Tom Griffiths, George Main, Ruth Morgan, Rob Nugent, Emily O’Gorman, Alison Pouliot and Sharon Willoughby; the Landscape Sociology group and Sabine Kasel at the University of Melbourne; Aidan Davison, Pete Hay and Jamie Kirkpatrick at the University of Tasmania; my
ARCUE and grassland ecology colleagues, especially Josh Dorrough, Paul Gibson-Roy, Dave Kendal, Ian Lunt, Mark McDonnell and John Morgan; Tom Bristow, Ross Colliver, Freya Mathews and the New Environmental Discourses reading group; the Environmental History Working Group (Australia and New Zealand); Justin Jonson and Tein MacDonald (SERA). Thanks also to Toby Barton, Ben Cooke, Nia Emmanouil, Emilie Ens, Georgia Miller, Paulina Olszanka, Alessandro Pelizzon, Reuben Stanton, Jessie Webb and Anna Wilson for rich conversations.

Across the seas I was met with generosity, encouragement and friendship. Thank you to Bill Jordan III, Eric Higgs, Gavin van Horn, Tom Simpson and Dan Spencer in the USA; Ella Furness and Tony and Jane Stoneham in the UK, and Simon West (then) in Stockholm.


It would take another thesis to thank my extended family for all that they do. Here I particularly want to acknowledge Joan and Randall Pearce, Judith and Rob Bakes and Kate, Reuben and Sam Stanton for the meals, beds and babysitting that made completing this project with a baby possible. I am a product of a loving family that values both education and the outdoors; I am very lucky.

To my husband Will Bakes, I have cherished your passion for this project, and your unwavering love and support in work and life. Esther, you have taught me a new world of efficiency and care.

Dr. Ella Furness, our friendship remains the greatest thing to have come of this PhD. I will cherish it always.

Finally, I want to acknowledge the incredible educational and professional opportunities, flexible-work arrangements, scholarships, paid maternity leave and mentors that have got me here.

This research was generously funded by an Australian Postgraduate Award, a Christine Fifield Bursary (Capital Region Landkeepers’ Trust) and a Robert Lesslie Scholarship (ANU). The Mike Smith Award (National Museum of Australia) and Ken Inglis Award (Australian Historical Association) were gratefully received. The Australian Research Centre for Urban Ecology (ARCUE) and The Myer Foundation funded the trip to Madison that preceded this PhD. Social research was conducted under Melbourne University Human Ethics project #1545274.1.
Abstract

Before dust, there was soil; before bare earth, there were grasslands; before a crumbled road, there was a sand dune. The transition between these states tells a story common to settler colonies, of systemic violence to both ecological and human communities. This thesis considers both material changes in the land and cultures that produce and respond to them.

The role of history in ecological restoration is changing, prompted by anthropogenic climate change and recognition of relationships between Indigenous peoples and ecological systems. Accordingly, dialogue on the ethical aspects of ecological restoration has resurged. Informed by critical perspectives of environmental history, political ecology and decolonising methodologies, this thesis builds on ecological restoration discourses by illuminating cultures of restoration within a settler society undergoing irreversible change.

In Australia, mentalities that continue historical injustices by treating the continent as ‘empty’ or ‘balanced’ until a ‘settler-clock’ began to tick are identified. ‘Australia is still, for us, not a country but a state of mind. We do not speak from within, but from outside’ writes poet Judith Wright.¹ This thesis argues that ecological restoration can pull people powerfully into a new state of mind. Through restoration practices, ecological imaginaries rub up against material realities, and important ethical realisations, with associated moral obligations, emerge.

This thesis is made of practice as much as theory, doing as much as thinking. A technique of turning to history, practice and reflection is illustrated within three place-based studies in New South Wales. Each project emerged within a transformative decade in Australia’s history: 1930s Broken Hill; 1950s Monaro, and, 1970s Bermagui. The studies span semi-arid, montane and coastal ecosystems, and mining, grazing and mixed production/tourism industries. We find layered histories and environmental justice concerns; objects in the land and reflections on social memory,

¹ Wright, “The Upside-Down Hut,” 301.
and, affective emotional practices and uncertain futures. In each place, a distinct and complex story arises. For participants, ecological restoration is not about restoring a thing, but rather about cultivating meaningful committed relationships with local ecologies. More than ever, practices that assist in negotiating change and uncertainty are required. Engaging with history, practice and reflection facilitates enhanced ecological outcomes, cultural outcomes and health outcomes for practitioners and their communities.

This thesis contends that a critical assessment of the politics of restoration is necessary. Framed within settler-colonial or modernist, techno-fix narratives and removed from the specificities of local place, ecological restoration participates in ethically fraught activities. Restoration can support narratives of denial, enable ongoing degrading land uses, permit the evasion of industry and government accountability and distract from desperately needed policy reform. Systemic changes are still required to expand environmental work beyond the limits of passionate individuals and groups, and, beyond the limited boundaries of Western science.

Despite being housed in the world of science and management, ecological restoration is profoundly cultural. Critical local histories are essential as moral guides to responsible and inclusive interventions. This thesis demonstrates that the practical and political potential of ecological restoration is expanded through histories of ecological restoration and histories for ecological restoration.
# Table of Contents

Acknowledgements v
Abstract vii
Table of Contents ix
Thesis Summary xi
Glossary of Terms xiv
List of Figures xvii
List of Tables xix
List of Appendices xix
List of Abbreviations xx
Preface 1

## Part A: Research Context

### A1 | Understanding Ecological Restoration
- Social and ecological foundations 4
- Critics of ecological restoration 7
- Climate change and the Anthropocene 9
- Perspectives on ‘people’ and ‘nature’ 13
- The changing role of history in ecological restoration 19
- Emerging trends in ecological restoration 21
- Enlivening a politics of practice 25

### A2 | Setting the Australian context
- Troubling ‘Year Zero’ 28
- Ancient histories 33
- Cultural ecologies 35
- Ecological imperialism and industrial agriculture 39
- Spatial divisions 42
- Trends in Australian conservation 47

### A3 | Research Framing
- Place studies 61
- Environmental history 63
- Political ecology 68
- Decolonising methodologies 69
- A hybrid toolkit 70

## Part B: Research Practice

### B1 | Dust
- Background to research 74
- Dust: History 75
- Dust & Broken Hill 75
Dust: Practice
Restoring Broken Histories 78
Gathering histories for ecological restoration 110
Dust: Reflection 113
Legacy landscapes and environmental justice 113
Fighting for Barka 122
Celebrating The Regen 127
People of The Regen 136

B2 | Soil 142
Background to research 143
Soil: History 148
Soil & the Monaro 148
Soil: Practice 158
Making it personal: Stories of objects in land 158
Reimagining technologies for restoration 204
Soil: Reflection 207
Trends in NSW environmental policy 207
‘Neo-liberalisation’ and ‘stewardship’ 209
Legislative limitations 212
Climate change and agricultural practice 214
Restoring Yamfields 218

B3 | Sand 226
Background to research 227
Sand: History 228
Sand & Bermagui 228
Sand: Practice 232
Affective Ecological Restoration: Bodies of Emotional Practice 232
Restorative ecologies for changing places 251
Sand: Reflection 253
The political work of embodied relationships 253
Expanding ethical practice 257
The significance of mourning 260

Part C: Research Reflection 268
C1 | Reimaging boundaries for restoration 269
Reimagining time 271
Softening lines 275
Restoring with place 281

C2 | Towards recuperative practice 292
Beginning with place 294
Getting on together 297
Critical histories for ecological restoration 299

Afterword 301
Bibliography 303
Appendix 338
Thesis Summary

Part A: Research Context

Part A introduces the field of ecological restoration. It argues that restoration is both a cultural and environmental practice facing new challenges and opportunities. It outlines the framework and methods of the present study.

A1 | UNDERSTANDING ECOLOGICAL RESTORATION

This section presents an historiographical account of the social aspects of ecological restoration. It positions changes in the field within ethical shifts in settler societies and within the context of anthropogenic climate change. It highlights the need for further humanities enquiry into the moral and political aspects of ecological restoration.

A2 | SETTING THE AUSTRALIAN CONTEXT

This section introduces the Australian context within which particular ecological restoration cultures emerge. It sets the scene of human relationships with Australian ecosystems and outlines the need for a critical analysis of contemporary restoration cultures in Australia.

A3 | RESEARCH DESIGN

This section outlines the methodological framing of the work, gives background to disciplinary approaches and research techniques, and explains the selection of place studies.

Part B: Research Practice

Part B is made up of three place studies: Dust, Soil and Sand. Each study is divided into three parts: history, practice, and reflection. History outlines local and temporally-specific accounts of decline and repair amidst the conservation culture prevalent as restoration work emerged. Practice presents studies of ecological restoration projects and participatory place-based experiences. Reflection builds on the wider lessons from each study: what they contribute to knowledge of Australian environmental cultures and how they add to contemporary ecological restoration discourses.
B1 | DUST

This section takes us to one of the earliest examples of Australian ecological restoration within an emerging environmental consciousness of 1930s inland Australia. It reports on five layered histories of ‘The Regen’ in the remote arid mining city of Broken Hill. Plural histories highlight the breadth of human relationships bound up in ‘The Regen’ as an idea and as a geopolitical space. This study highlights opportunities to expand notions of time in restorative practices and argues for expanding voices, strengthening policy and calling out responsibility.

B2 | SOIL

This section emerges from grassland and grassy-woodland ecosystems of mixed land-use properties in the Monaro region. Practices form part of a continuing relationship between soil conservation and grazing that begun in reaction to post-war industrial development works of the 1950s. Restorative relationships through three objects in the land woven into changing daily practices are articulated. Reflections on restoration practices juxtapose contrasting land-uses; challenge notions of belonging and help to re-frame acceptable relationships with place. This study highlights opportunities to widen notions of space in restorative practices, argues for the importance of memory and reflection, recommends pluralism in restoration governance and encourages soils and ecological systems to be understood as public goods with value beyond private-property boundaries.

B3 | SAND

This section visits the edge of the continent, where waves crash into coastal Bermagui. The activities in this study emerge from within an environmental ethic of the 1970s. Five emotions identified through participant-observation with volunteer restoration groups and archival study are described. Restoration is framed as an affective practice. Relationships with place, rather than restoration outcomes are central to restoration experience. This study highlights opportunities to expand notions of place and of moral boundaries in restorative practices and presents locally-embedded experiences of commitment and care amidst uncertainty.
Part C: Research Reflection

Part C reflects on the lessons of the place studies and of the thesis as a whole. It explores ethical and political risks associated with ecological restoration and advocates techniques to counter them. It encourages drawing on specific local histories and complex particularities of place so as to enhance the social and ecological potential of the practice.

C1 | REIMAGING BOUNDARIES FOR RESTORATION

This section posits ecological restoration as a political practice with the capacity to both reinforce and challenge traditional boundaries and social imaginaries. It reflects on the larger narratives of time, space and place that are co-produced through restoration work. It applies a critical lens to restoration cultures and introduces theoretical perspectives to assist in expanding restoration discourse and practice.

C2 | TOWARDS RECUPERATIVE PRACTICE

This section presents the lessons of the thesis. It recounts how ecological restoration participates in structural and material harms, while also providing meaningful and political responses to them. It documents the strengths of applying a critical humanities lens to restoration practices and cultures at all stages of project work and recommends methods for achieving this. It concludes with the message that the ethical outcomes of ecological restoration are determined by the specific and local ways that complex relationships with places are understood, reckoned with, and reimagined.
Glossary of Terms

This thesis draws on multiple disciplines; it is therefore necessary to clarify some key terms. These terms carry important meanings that help to simplify broad and complex categories but are not without their troubles.

Country

The Australian-Indigenous term ‘Country’ denotes the sentient, ethical, epistemological and cosmological reality of the world. ‘Country’, writes Bailgu and Njamal Indigenous writer Amberline Kwaymullina, ‘is not simply a geographical space. It is the whole of reality, a living story that forms and informs all existence. Country is alive, and more than alive—it is life itself.’

Country is something that settlers ‘own.’ For Indigenous people, Country owns them. This distinction is critical in ideas about belonging and responsibility for both.

Decolonisation

The term ‘decolonisation’ and ‘decolonising methodologies’ are used in allegiance with critical Indigenous pedagogies that work to de-centre colonising perspectives on Indigenous people, places, and culture (in this case that of the ongoing work of settler-colonialism). Contrasting to the term ‘postcolonial’, decolonising is a verb describing the ongoing work of attending to a colonial inheritance and the hegemony of Western knowledge framing and value attribution, which is ever present.

Ecological restoration / Restoration ecology

Restoration ecology is a subdiscipline of ecological science, and ecological restoration is the application of restoration science along with a suite of associated practices including ‘the participating human and natural sciences, politics, technologies, economic factors, and cultural dimensions’ to real-world practices. This thesis considers activities that fall on a spectrum from

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3 See Tuhiwai Smith, Decolonizing Methodologies.
‘rehabilitation’ (where the ecosystem is somewhat repaired with elements of the system) up to what restoration ecologists would define as ‘ecological restoration’ (aiming for full recovery of system processes and capacities according to a previous state). For simplicity in studying the ‘cultures of ecological restoration’ I refer in shorthand to ‘ecological restoration’ or ‘restoration’ throughout, unless ‘restoration ecology’ science is specified.

Indigenous people

Wherever possible, when referring to the Indigenous Australian people in a particular place the names of local peoples as they self-identify are used. When referring to wider reflections, the term ‘Indigenous people’ or peoples (to denote multiple groups) is used. This term carries problematic tendencies of subsuming plural into singular experiences, concerns for essentialism and refutations against essentialist critiques. Nevertheless, it remains the dominant terminology in academic circles and allows the work to speak to both the local and global experience. When reading ‘Indigenous people’, please read the diverse, complex, rich cultures of First Nations sovereign people that it represents.

More-than-human world

My use of the social geography term ‘more-than-human world’ draws on the work of geographer Sarah Whatmore. Now popular in geography discourse, ‘more-than-human’ forefronts the relational engagement with the agency of others and the implicit ethical significance behind these hybrid encounters. ‘More-than-human’ provides an alternative to the anthropocentric ‘non’-human and the fraught ‘post’-human alternatives, though it is not without its own complications of power.

Place

I use the terms ‘place’ and ‘place-based’ as they have emerged in human and cultural geography studies; as signifiers of complex local, embedded relationships of entangled parts of biotic and

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7 Panelli, “More-than-Human Social Geographies: Posthuman and Other Possibilities.”
abiotic elements of a system, becoming and co-becoming through encounter, time, and plural agency. This definition of place refutes that place is merely a social construction, rather, asserts that place is ‘both the site of and active agent in diverse subjective experience of space.’¹⁸ The term ‘place’ is used to transcend nature-culture dualisms of ‘people’ and ‘nature’ as much as possible. It is also used as it reinforces that restoration work always belongs somewhere.

**Settler-colonialism**

Settler-colonialism is an imperial expansion project that seeks to remove and replace those in the colonised territory with a new settler society. This was unequivocally the case in Australia. Settler-colonial acts impact peoples, cultures, non-human species and ecosystems and bring with them certain dominant social imaginaries. Settler-colonial discourse has changed over time and carries problematic assumptions but is an important starting point for conversation.⁹

**Social Imaginary**

The phrase ‘social imaginary’ and ‘imaginary’ draws on the work of sociologist Charles Taylor. A social imaginary, Taylor considers, is the ways that communities collectively ‘imagine their social existence, how they fit together with others, how things go on between them and their fellows.’¹⁰ When applied to human-environment relationships in settler-colonial contexts, this term is a useful way to convey dominant assumptions and expectations that shape relationships with peoples and places.

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⁹ See Veracini, “‘Settler Colonialism’: Career of a Concept”; Macoun and Strakosch, “The Ethical Demands of Settler Colonial Theory.”
# List of Figures

- **Figure 1**: Map illustrating The Rowley Line. Reproduced from Charles D. Rowley, *The Remote Aborigines* retrieved from storylines.org.au ................................................................. 45
- **Figure 2**: Griffith Taylor Map of sheep and wheat regions in Australia. Reproduced from Taylor & Beckit (eds.) 1920 ................................................................. 46
- **Figure 3**: Map of Australia's National Reserve System showing reserve governance (CAPAD 2016) ...................................................................................................... 57
- **Figure 4**: Map of IBRA regions (version 7) illustrating the diversity of bioregions in Australia (Australian Government, 2016) ........................................................................ 58
- **Figure 5**: Map of IBRA bioregions underrepresented in Australia's National Reserve System (CAPAD 2016) ......................................................................................................... 59
- **Figure 6**: Map of NSW bioregions with percentage protection level in DECCW (NSW state environment department reserves) (NSW Government, State of Environment 2019) ........................................ 60
- **Figure 7**: Location of field site, Broken Hill, NSW. Source: author ................................................................................................................................. 73
- **Figure 8**: The eroded Broken Hill Common of Regeneration Site A Circa 1936. Reproduced with permission of Barrier Field Naturalists Club ........................................ 83
- **Figure 9**: Map of Broken Hill depicting the 2009 extent of the Regeneration Area. Reproduced with permission of David Jones ................................................................................................................................. 84
- **Figure 10**: Example of May Harding’s botanical artwork, depicting the mulga that was cleared for timber to build and fuel the smelters. Reproduced with permission of Barrier Field Naturalists Club ................................................................................................. 89
- **Figure 11**: Contributions from 'Stories from The Regen', project led by the author with the Broken Hill Art Exchange, 17 June 2016. Source: author ......................................................................................... 104
- **Figure 12**: Close-ups of contributions from 'Stories from The Regen', project led by the author with the Broken Hill Art Exchange, 17 June 2016, depicting The Regen as: a place of childhood play; an oasis, and representing hope for future possibilities. Source: author ........................................ 105
- **Figure 13**: The Regen Forum in action: Regen Forum March 2017. Photo: Virginia Bear 130
- **Figure 14**: Example of notes from key-word elicitation exercise: Regen Forum March 2017. Source: author ................................................................................................................................. 130
- **Figure 15**: Themes arising from key-word elicitation exercise: Regen Forum March 2017. Source: author ................................................................................................................................. 131
- **Figure 16**: 'Past' considerations from collaborative workshop activity: Regen Forum March 2017. Source: author ................................................................................................................................. 132
- **Figure 17**: 'Present' considerations from collaborative workshop activity: Regen Forum March 2017. Source: author ................................................................................................................................. 132
- **Figure 18**: List of potential partners developed in collaborative workshop activity: Regen Forum March 2017. Source: author ................................................................................................................................. 133
- **Figure 19**: Workshop members browsing National Trust historic displays of The Regen: Regen Forum March 2017. Source: author ................................................................................................................................. 134
- **Figure 20**: Ann Evers on her property with The Regen in the background, March 2017. Source: author ................................................................................................................................. 136
- **Figure 21**: Location of field site, Monaro, NSW. Source: author ................................................................................................................................. 142
Figure 22: Oswald W.B. Brierly - Journal of a visit to Twofold Bay, Maneroo, and Districts beyond the Snowy River, Dec. 1842 to Jan. 1843. Source: State Library of NSW Manuscripts, Oral History and Pictures Catalogue. ................................................................. 148

Figure 23: Edge of fenced regeneration plot at Montreal. Source: author. .............................................. 176

Figure 24: Natural regeneration after fencing off a paddock in 1960s at Montreal. Source: author. ................................................................. 176

Figure 25: Kiwitech electric fencing at Millpost. Source: author. ................................................................. 177

Figure 26: Letting boundary fences fall at Massy farm. Source: author. ......................................................... 177

Figure 27: Extract from David Watson’s recreated map of the Millpost region from land titles in the late 19th Century. Reproduced with permission of David Watson. ........................................... 187

Figure 28: Extract of David Watson's notes on family & property history. Reproduced with permission from David Watson................................................................................. 188

Figure 29: Permaculture plan of Millpost, 1994. Photo: author. ................................................................. 188

Figure 30: Swales constructed from non-indigenous tree branches (fascines) at Millpost. Source: author................................................................. 189

Figure 31: Planting for landscape connectivity at Severn Park. Source: author. ......................................................... 189

Figure 32: Bob Wilkinson's first tractor circa 1950; one of the first in the Monaro. Source: Wilkinson family album......................................................................................... 192

Figure 33: June Wilkinson on her horse after rain circa 1994. Source: Wilkinson family album......................................................................................... 195

Figure 34: June and Bob Wilkinson with a local ecologist monitoring wildflowers. Source: Wilkinson family album......................................................................................... 196

Figure 35: Wildflower photography documents the beauty and diversity on the farm. Source: author................................................................. 198

Figure 36: Baby Sinclair Wilkinson and a friend in pram circa 1967. Source: Wilkinson family album......................................................................................... 199

Figure 37: Dunbar Wilkinson comparing then and now. Source: author................................................................. 202

Figure 38: Oswald W.B. Brierly - Journal of a visit to Twofold Bay, Maneroo, and Districts beyond the Snowy River, Dec. 1842 to Jan. 1843. Source: State Library of NSW Manuscripts, Oral History and Pictures Catalogue. ................................................................. 222

Figure 39: Location of field site, Bermagui, NSW. Source: author ................................................................. 226

Figure 40: Top: Long Swamp (looking southwest) in 1880 showing evidence of clearing, grazing and mining. Source: National Library of Australia: Trove article 161914363. Bottom: restored Long Swamp (looking north) 2015. Source: author ................................................................. 235

Figure 41: Top: Old Tilba Road (looking south) after storm surge circa 1974. Photo by Sister Harris, reproduced with permission of Bermagui Historical Society. Bottom: Old Tilba Road (looking north) after restoration efforts, 2015. Source: author ................................................................. 236

Figure 42: Recent plantings by Bermagui Dunecare on Cuttagee Point, 2015. Source: author. ................................................................. 238

Figure 43: Group on Gulaga along Tilba Track circa 1889 with collected ferns and orchids. Source: Mt. Dromedary Flora Reserve no. 79948 Bodalla State Forests no. 606: working plan. ................................................................. 240
List of Tables

Table 1: Short, medium- and long-term management actions from collaborative activity:
Regen Forum March 2017. Source: author. ....................................................................................................................... 133

List of Appendices

Appendix 1: Thesis Executive Summary in Poetry............................................................................................................. 338
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>AABR</td>
<td>Australian Association of Bush Regenerators</td>
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<tr>
<td>ABC</td>
<td>Australian Broadcasting Corporation</td>
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<tr>
<td>ARCUE</td>
<td>Australian Research Centre for Urban Ecology</td>
</tr>
<tr>
<td>AWAY</td>
<td>Aboriginal Women and Yams Project</td>
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<tr>
<td>AWC</td>
<td>Australian Wildlife Conservancy</td>
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<tr>
<td>BFFRT</td>
<td>Bermagui Flora and Fauna Reserve Trust</td>
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<td>BFNC</td>
<td>Barrier Field Naturalists Club</td>
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<tr>
<td>BHAE</td>
<td>Broken Hill Art Exchange</td>
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<tr>
<td>K2C</td>
<td>Kosciuszko to Coast</td>
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<tr>
<td>IBP</td>
<td>International Biological Program</td>
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<tr>
<td>IPA</td>
<td>Indigenous Protected Area</td>
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<tr>
<td>NGO</td>
<td>Non-Government Organisation</td>
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<td>NRM</td>
<td>Natural Resource Management</td>
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<td>NRS</td>
<td>National Reserve System</td>
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<td>NSW</td>
<td>New South Wales</td>
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<tr>
<td>NTA</td>
<td>Native Title Act</td>
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<td>PAR</td>
<td>Participatory Action Research</td>
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<tr>
<td>SELLS</td>
<td>South East Local Land Services</td>
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<td>SEPP14</td>
<td>State Environment Planning Policy No 14</td>
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<tr>
<td>SER</td>
<td>Society for Ecological Restoration</td>
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<tr>
<td>SERA</td>
<td>Society for Ecological Restoration Australasia</td>
</tr>
<tr>
<td>TEK</td>
<td>Traditional Ecological Knowledge</td>
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<tr>
<td>TNC</td>
<td>The Nature Conservancy</td>
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<tr>
<td>TSR</td>
<td>Travelling Stock Route</td>
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<tr>
<td>WOPR</td>
<td>Whole of Paddock Restoration</td>
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<tr>
<td>WWI</td>
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<td>WWII</td>
<td>World War 2</td>
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Preface

In the mid-west of the United States in October 2013, I made my first serious foray into the world of ‘ecological restoration.’ The purpose of my trip was to present research on management of Melbourne’s native grasslands at the Society of Ecological Restoration’s international conference in Madison, Wisconsin. Here I came across a community of passionate individuals, some of whom were willing to sit with the uncertain and troubling ethical aspects of the field, and generously discuss them with me. I had extended conversations with Eric Higgs, Bill Jordan and Curt Meine; and with Tom Simpson at the McHenry County Conservation District, and Gavin van Horn at the Centre for Humans and Nature in Chicago. I was intrigued by the cultural, political and ethical dimensions of environmental fields that are too-often overlooked by ‘pure science’ perspectives. I continued exploring the field and sharing long conversations with these friends. Within two years, I had gathered a remarkable supervision team, and started this PhD.

I became interested in history through ecology. My experience in Australian conservation projects in urban, rural and remote contexts highlighted to me the endurance of settler mentalities and out of touch social imaginaries that continued to impact cultures and ecosystems. I felt that understanding local cultures and local histories mattered to restoration projects as much as local ecologies, and, that something uniquely Australian was not being adequately represented in dominant restoration dialogue. It became clear that an opportunity existed to further enquiry into the political and ethical work of ecological restoration, in particular through understanding the role of history in the practice.

In modern Australia, history manifests powerfully as a series of path dependencies extending back to colonial visions of Australia that saturate human-environment relationships. The first examples of ecological restoration in Australia were not to return a notional ‘wilderness’, but rather, were about co-existence and function–restoring processes that enabled a certain cultural

11 This work was carried out for the Australian Research Centre for Urban Ecology, Royal Botanic Gardens Melbourne.
engagement with place to continue. The research presented herein considers cultures of ecological restoration in local contexts from the dust, soil and sand of south-eastern Australia, partly because of the arguments outlined within, and partly because this is the part of the country I know and love. Critical histories are employed to put Australian ecological restoration in an historical context, and to promote the wider use of local environmental histories and participatory action in guiding restoration discourse and practice.

During the project I was regularly unsettled by simultaneously critiquing ecological restoration on the one hand, while fervently arguing for its role in the cultivation of inclusive and enriching communities on the other. I hope that this work makes some contribution to facing and negotiating the complex ethical considerations and implications of ‘environmental’ work. I hope that it does justice to the voices of practitioners, landholders, community groups, dust, soil and sand–within which the richest encounters and lessons dwelt.

In the time that I wrote this thesis, my husband and I were building a home on a piece of land outside Kyneton, in Central Victoria in the south-east of the continent. The same stately gum that cradles our mud brick home has witnessed a dramatic change on this, Taungurung country. Acres of the pasture grass *Phalaris* speak of ‘pasture improvement’ for grazing, while the bobbing button heads of local *Juncus* species are reminders of the very occasional wet winters that transform much of the property into a swamp. With careful noticing, chocolate lilies (*Arthropodium strictum*), spear (*Austrostipa* spp.) and wallaby (*Rhytidosperma* spp.) grasses can be seen. Every so often, a resident black wallaby (*Wallabia bicolor*) ring-barks a fruit tree, while daily the diverse bird life entertains our young baby. With them live neighbourhood cows, chickens, hares and foxes, both inside and beyond fences. At the end of the road in a local reserve is a large bluestone quarry and forests with coppiced limbs from selective felling but many visitors see only ‘wild’ nature. Living here, planting and removing, building and breaking down, has changed me. Writer Stephen Muecke explains that ‘[T]hings and people are mutually transformative–the place changes according the who comes to occupy it and what they do there; the people change as a consequence of the place.’¹² I have come to understand ecological restoration as a pathway to such intimate relationships.

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Part A: Research Context
A1 | Understanding Ecological Restoration

The precursors to contemporary ecological restoration materialised in the early twentieth century. At this time, ecological theories, deleterious environmental change, and human experience collided to establish a practice that, at its core, aimed to return ecological systems to a previous state. This section provides background to ecological restoration. It outlines the significance of both climate change, and the recognition of people in ecosystems, to shifting ecological restoration practices and the changing role of history in restoration theory and practice. It argues that the field has the strengths and the opportunity to embrace uncertainty, celebrate human complexity and enhance the ethical and political dimensions of the practice.

Social and ecological foundations

Ecologists study organisms within their environments. Ecology is relational. As a science, it retains at its core a focus on holism and integration. Three aspects of ecology stemming from these foundations make it significant in restoration practice. First is that ‘[T]he interrelationship of all things is a scientific insight imbued with ethical consequence.’ This makes ecology, of all the sciences, able to cope with complex realities and ethics. Second, as American environmental historian Gregg Mitman explains, ecology is a science that includes people. Social, historical and political factors necessarily participate in ecological science, practice and thinking. Third, ecology is a practical science, working in the field and working with forestry, agriculture, and fisheries. While contemporary ecological theory validates itself through mechanistic frameworks (models that attempt to capture, represent and predict the complexity of the world) the application and iteration of theories is through engagement with real-world scenarios. In these scenarios ecological theories rub up against layered value systems and narratives of place.

13 Hay, Main Currents of Western Environmental Thought, 135.
15 Cittadino, Nature as the Laboratory: Darwinian Plant Ecology in the German Empire, 1880–1900.
16 Hay, Main Currents of Western Environmental Thought.
Despite the emergence of the term in the mid-1800s, ‘ecology’ as a field of endeavour took longer to gain momentum. Historian Libby Robin describes how in Australia, ecology was ‘known to scientists from around the turn of the century, but did not really emerge as a discipline until the 1920s.’

Soil conservation concerns brought ecology to the public eye in the 1940s, and by the 1960s it had become a socially significant science. By the 1960s, ecology had become part of what Robin calls a ‘conservation genre’—integrating scientific, philosophical and aesthetic concerns. The ‘conservation genre’ gained momentum at the end of the 1960s in reaction to the impacts of modernist industrialisation and growth. In the early 1960s, ‘[T]he International Council of Scientific Unions launched an International Biological Program (IBP) to promote the science of ecology and to put it on a more quantitative basis.’

The dual pull for ecology to be socially and politically considered, and a valid quantitative science, continues.

Around this time, popular writing brought ecological thinking to the masses. Aldo Leopold’s Sand County Almanac (1949) became one of the leading calls for an environmental ethic. Leopold—an American conservationist, forester and wildlife ecologist—is heralded as the father of American ecological restoration, through the promulgation of his ‘land ethic’ and the establishment of one of the earliest ecological restoration projects at the Curtis Prairie at the Madison Wisconsin Arboretum. Rachel Carson’s Silent Spring (1962) further fuelled growing environmental concerns, targeting the impact of pesticides on the environment. Carson’s work demonstrated the intentional manipulation on the part of big industries, and the need for greater government control and regulation. Around this time, Western ecologists, in partnership with land managers, began to explore whether the nature that they saw as degraded could be assisted in recovery back to health.

Like the slow rise of ecology, the precursors to ecological restoration emerged in scattered sites in the early twentieth century, but it took until the 1970s for the practice to become embedded

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17 Robin, Defending the Little Desert: The Rise of Ecological Consciousness in Australia, 62; See also Hay, Main Currents of Western Environmental Thought.
19 Robin, 17.
20 Robin, 68.
21 Duffy, “‘Silent Spring’ and ‘A Sand County Almanac’: The Two Most Significant Environmental Books of the 20th Century.”
22 Meine, Aldo Leopold: His Life and Work.
in environmental discourse and practice. The community grew, and, in 1987 the international Society for Ecological Restoration (SER) was founded (incorporated in 1988). SER is a network for those studying, practising and interested in restoration ecology (the science) and ecological restoration (the practice). It is a platform to ‘foster collaboration, knowledge sharing, networking, research, and policy discussions among the many actors and interests it represents.’ Today, SER has regional chapters that focus on local issues and foster connections. There are nine in the United States of America, two in Canada, one in Europe and one in Australasia (founded 1999 as an Australian chapter then encompassing a regional Australasia focus in 2011). SER also focuses its work through thematic sections, which include: International Network for Seed Based Restoration and Large-scale Ecosystem Restoration Section.

The uniting factor amidst early restoration attempts was to ‘re-create historic associations.’ In its most simple terms, ecological restoration works towards returning a landscape to a previous state. In many cases, this state is one that existed prior to a significant disturbance such as colonialism and species introduction, or mass disturbance following a ‘natural disaster’ such as fire or flood. Traditional ecological restoration is underpinned by the ecological theory of climax ecology, coined by American plant ecologist Frederic Clements in 1916. Clements developed the theory that in the absence of external disturbances, ecosystems transition through successive states to arrive at a climax (steady-state) condition. According to this theory, in the absence of disturbance, ecosystems ‘ought’ to be reversed to bring to the stable condition. Traditionally, this manifests in the use of a ‘reference ecosystem’ to guide activity.

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24 Jordan and Lubick.
25 Jordan and Lubick.
27 Society for Ecological Restoration, “Chapters, Sections and Student Associations.”
29 Van Wieren, “For the Sake of the Wild Others Restoration Meanings for Nature.”
31 See Jordan, The Sunflower Forest: Ecological Restoration and the New Communion with Nature. Complicit in this philosophy is a cosmological assumption of fundamental belonging of certain assemblages, in certain places, within a certain time.
however, an alternative theory was popularised by ecologist Henry Gleason who, contrary to Clements, argued that ecosystems are stochastic.\textsuperscript{32}

Ecologists have on multiple occasions disproven climax theory. ‘New’ or ‘non-equilibrium’ ecological theories have been gaining in popularity, based on physics models and theories of chaos and self-organisation.\textsuperscript{33} These theories complicate ecological restoration by highlighting that, in response to change, ecosystems are dynamic and unpredictable.\textsuperscript{34} No longer do singular historical goals satisfy in ecological restoration efforts. The common objective of conservation biology, restoration ecology and invasion biology to return ecosystems to a past state, often an idealised one, is now criticised.\textsuperscript{35} As American philosopher J. Baird Callicott expressed, if ‘the landscape has always been a mosaic of ever-shifting patches, why should we be concerned with ecological restoration at all?’\textsuperscript{36} The goals and roles of the science of restoration ecology, and the practice of ecological restoration are coming under the spotlight.

**Critics of ecological restoration**

In its early days, ecological restoration was positioned as a new environmental paradigm that would reintegrate humans into nature and heal environmental damage. Restoration practitioners were caught off-guard by negative philosophical responses to restoration.\textsuperscript{37} The criticisms spurred vocal discourse about the abilities, qualities and ethics of the practice. Philosopher Eric Katz published both *The Big Lie: Human Restoration of Nature* (1992) and later *Further*


\textsuperscript{33} For example see Prigogine, *The End of Certainty: Time, Chaos, and the New Laws of Nature*.  


\textsuperscript{35} See in particular Stott, “Biogeography and Ecology in Crisis: The Urgent Need for a New Metalanguage”; Robbins and Moore, “Ecological Anxiety Disorder: Diagnosing the Politics of the Anthropocene.” In 1994, Pickett and Parker wrote that choosing a reference state or system is a ‘trap’ and ‘pitfall’ to be avoided.’ In response, Aronson and others argued that ‘for the purposes of project design and evaluation, it is desirable to establish at the outset some standard of comparison and evaluation, even if it is arbitrary and imperfect’. Aronson, Dhillion, and Le Floc’h, “On the Need to Select an Ecosystem of Reference, However Imperfect: A Reply to Pickett and Parker,” 1.  

\textsuperscript{36} Callicott, “Choosing Appropriate Temporal and Spatial Scales for Ecological Restoration,” 417.  

\textsuperscript{37} Spencer, “Panel: Ethics and Restoration: Where We’ve Been, Where We Are, and Where We’re Going.”
Advances in the Case Against Ecological Restoration (2012).\(^{38}\) Katz’s main thesis is that restoration promotes human domination and control, produces human artefacts not ‘nature’, and subverts environmental protection. Similarly, in 1997, Australian philosopher Robert Elliot charged restorationists with deception by ‘faking nature’. Elliot’s assertion is that restored ecosystems are technological productions that purport to be, but are far from, equal value.\(^{39}\) Katz and Elliot’s further concern is for the capacity for restoration to ‘green-light’ development and promote environmental offsetting by suggesting that damaged environments can be replicated or produced elsewhere.\(^{40}\)

A goal of ‘historical fidelity’—returning to a pre-disturbance or ‘original’ ecosystem—worked to legitimise ecological restoration within the environmental sciences and defend it from philosophical critiques. Through good intention, and staying true to local historical-associations, restoration practitioners deflected charges of ‘human control’ or of an ‘anything goes’ approach that countered preservationist thinking. Philosopher Andrew Light contributed his ‘pragmatic perspective’, differentiating between ‘benevolent’ and ‘malicious’ restoration based on the claims and intention behind restoration work.\(^{41}\) Light backed ecological restoration further to argue for its important role in the cultivation of ‘ecological citizenship’, which assumes that moral responsibilities for nature are part of being a good local citizen.\(^{42}\) In 2002, Canadian philosopher, anthropologist and restoration ecologist Eric Higgs published Nature by Design. Higgs outlines four qualities that enable restoration to be ‘morally good’: 1) restoring for ecological integrity; 2) being informed by history; 3) including an element of ‘wild design’ that provides ‘openings for nature and culture, as one being, to go wild’, and 4) practising what he coins ‘focal restoration’, wherein one can ‘rebuild our concern with things that matter.’\(^{43}\) Restoration then, is understood to be a socially-significant practice that can alter social relationships with human and more-than-human communities.

The main philosophical critiques of restoration discourses are limited in that they remain within the confines of Western frameworks that reinforce nature-culture dualisms and are centred on

\(^{38}\) “Katz_The_Big_Lie.Pdf”; Katz, “Further Adventures in the Case against Restoration.”
\(^{39}\) Elliot, “Faking Nature.”
\(^{41}\) Light, “Ecological Restoration and the Culture of Nature: A Pragmatic Perspective.”
\(^{42}\) Light, “Restoring Ecological Citizenship”; Light, “Ecological Citizenship: The Democratic Promise of Restoration.”
settler-relations with land. Possibilities, rather than ethics, are in focus. Dominant current
dialogue about ecological restoration considers the normative concepts that underpin the
practice. Callicott explains that the ‘simple and easy understanding of the appropriate norm for
ecological restoration is premised on two myths that then prevailed – the wilderness myth and
the ecological-equilibrium myth.’\textsuperscript{44} Histories of Aboriginal peoples are denied and actively
erased through the ‘wilderness myth’.\textsuperscript{45} Thus, with both myths out of date, ecological
restoration narratives are complicated.

This thesis builds on existing work of environmental ethicists and social scientists to consider
the ways that ecological restoration participates in locally-based social and political change. It
aims to contribute tools to guide the participatory and politically mobilising potential of
restoration experience.

Climate change and the Anthropocene

A second wave of internal debate and wider philosophical critique takes to task the relevance
of ecological restoration and historical reference ecosystems amidst accelerating environmental
change in the Anthropocene.\textsuperscript{46} Ecological range shift is evidently dramatic, and species
relationships and interactions are changing fast.\textsuperscript{47} Contemporary anthropogenic climate change
renders ecosystems that were local to one place in the past unsustainable in present and future
conditions.\textsuperscript{48} Accordingly, ecological restoration practitioners are grappling with how to
navigate orientation to the past amidst a fast-changing present. This is an example of scientists
increasingly facing ‘dilemmas and dislocations’\textsuperscript{49} when applying universal theories to locally
and temporally based practices.

\begin{footnotesize}
\begin{enumerate}
\item Callicott, “Choosing Appropriate Temporal and Spatial Scales for Ecological Restoration,” 418.
\item As discussed in detail in \textit{A2: Setting the Australian Context}.
\item The Anthropocene is a name coined in 2000 by Paul Crutzen to define a new geological epoch in which humans are the main
planetary force. See Robin, “Histories for Changing Times: Entering the Anthropocene?” Also Crutzen and Stoermer, “‘The
Anthropocene.’”
\item McCarty, “Ecological Consequences of Recent Climate Change”; Walther et al., “Ecological Responses to Recent Climate
Change.” The significance of climate change on Australian ecosystems is particularly marked. See review article: Hughes,
“Climate Change and Australia: Trends, Projections and Impacts.”
\item Vitousek et al., “Human Domination of Earth’s Ecosystems.”
\item Griggs, Norval, and Wagenaar, \textit{Practices of Freedom: Decentred Governance, Conflict and Democratic Participation}, 11
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Global environmental change heightened the challenge of defining a fixed concept of ecological restoration that had existed since the 1990s. Amidst accelerated change, ecologists disagree with one another about the spatial and temporal scales and baselines for shaping restoration goals. Many now believe that for future landscapes to be sustainable, ecological and functional, new species-assemblages might have a place where they historically have not. Ecologist Young Choi advocates: ‘We cannot go back to our nostalgic past!’ and, that instead we ought redefine aims of restoration towards ‘functional rehabilitations for the future.’ In some cases, assisted migration is welcomed in environmental practices, creating ideological challenges within the community. Ecologist John Cairns Jr. warns that ‘well-meaning restoration efforts may displace species best able to tolerate anthropogenic stress’, with the potential to ‘impede the natural successional process and render the whole system less stable.’ Indeed, ecologist James Harris and others warn against a ‘genetic dead end’ if climate change is not taken into account. Ecologist Vicki Temperton cautions that planning for future environmental conditions does not mean that ‘we need not be concerned about invasive species, loss of diversity, habitat degradation, or global climate change but that we need to include them when we consider how to manage the earth’s ecosystems in the present and the future.’

In light of these changes and depicting an evolving practice, the Society for Ecological Restoration’s SER International Primer on Ecological Restoration, The SER International Primer on Ecological Restoration, and the Society for Ecological Restoration Australasia’s National Standards for the Practice of Ecological Restoration in Australia (described further below) all clarify that restoration is not about restoring to a blueprint of the past, but is about reinstating functional locally indigenous ecosystems and assisting in their adaptation to

55 Harris et al., “Ecological Restoration and Global Climate Change,” 174. For humanities perspectives on rethinking invasion ecology in the Anthropocene see: Head et al., “Living with Invasive Plants in the Anthropocene: The Importance of Understanding Practice and Experience.”
ecological change. Nevertheless, the assumptions of the past being the guiding principle, and a reference ecosystem being key to ‘legitimate’ ecological restoration projects endures for many in the field.

Increasingly, the concepts of ‘thresholds’ and ‘feedbacks’ have been included in restoration ecology theory to explain scenarios where reversal of ecological conditions is out of reach. The concept of ‘novel ecosystems’ offers a way to focus on improving the ecological function of parts of the landscape that ecologists assert cannot be wholly restored. It was developed by restoration ecologists to cater for those ecosystems for which an historic state is seen as beyond attainable. Hobbs and others separate ecosystem change into three categories: remains in, or near to, its historic state; becomes altered into a hybrid state; or, experiences such a degree of change that it can be considered a novel ecosystem. The move towards a ‘novel’ state, they argue, can be through primary biotic change (i.e. extinction or invasion), or through primary abiotic change (i.e. land use or climate change), or through a combination of both. They assert that ‘hybrid’ areas have potential for restoration, should society choose to invest necessary resources. These hybrid areas are, therefore, the areas of greatest potential transition, where debates involving social values are likely to be most prominent.

Novel ecosystems theory is unsurprisingly confronting for a community whose founding narratives were based on climax theories of ecology, and whose philosophical validation was founded on returning to an ‘original’ state. Early novel ecosystems discussions spurred heated debate within the ecological restoration field. Proponents of novel ecosystems were charged with deterring funds away from projects considered more ‘pure’, and, by attributing ‘value’ to ‘damaged’ landscapes, reducing values of those ‘undamaged.’ In particular, an echo of Elliot’s concerns about giving up on historic value returned. But adaptation, argue Hobbs and others,

58 Suding, Gross, and Houseman, “Alternative States and Positive Feedbacks in Restoration Ecology.”
59 See Hobbs, Higgs, and Harris, “Novel Ecosystems: Implications for Conservation and Restoration.”
60 Hobbs, Higgs, and Harris, 599.
61 Murcia et al., “A Critique of the ‘Novel Ecosystem’ Concept”; Simberloff, Murcia, and Aronson, “Novel Ecosystems Are a Trojan Horse for Conservation.”
is ‘a normal characteristic of ecosystems in response to disturbance and environmental change.”\(^{62}\)

Importantly, novel ecosystem theory integrates those places that may be considered too far damaged into a caring ethic, ‘re-branding’ unloved places. However, the thinking is still framed by othering: an objective ‘novel’ ecosystem is presented against a static ‘non-novel’ one that came before.\(^{63}\) The contribution of novel ecosystem science can be understood as a significant and timely contribution to ecological restoration and ecological science discourses. It prised open the space for bigger questions of value to be pondered and acknowledgement of change to be confronted.

From here, social constructions of ‘nature’ and particularities of the ethics of ecological restoration were more openly debated. Following philosopher Alan McQuillan, philosopher Gretel Van Wieren outlines how poststructuralist understandings of nature can be adopted in *defending* the ethics of ecological restoration, for if there is no singular ‘real’ ‘knowable’ or ‘authentic’ nature, then it can-not be measured by Western-scientific ontological perspectives.\(^{64}\)

In 2004 restoration ecologists Mark David and Lawrence Slobodkin published a paper in *Restoration Ecology* arguing from an ecological deconstructionist perspective that the definition of restoration goals and objectives as well as ideas of ecological health are characterised by values, not science.\(^{65}\) Indeed, in 2002, ecologist Jill Lancaster described the concept of ecosystem ‘health’ as a ‘ridiculous notion in a scientific context because there can be no objective definition of “health” or method for defining degrees of health.”\(^{66}\)

Responses to such views highlighted the willingness of the Society for Ecological Restoration (SER) to accept the importance of social values and roles, extending the interdisciplinary nature of the practice.

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\(^{62}\) Hobbs, Higgs, and Harris, “Novel Ecosystems: Implications for Conservation and Restoration.,” 599.  

\(^{63}\) Novel ecosystem theory is of particular relevance to Australia (where Richard Hobbs lives, in the west). An argument can be made for the entirety of contemporary Australia as ‘novel’ through the catastrophic impacts of European colonisation that irreversibly altered Australian ecologies.  

\(^{64}\) Van Wieren, “For the Sake of the Wild Others Restoration Meanings for Nature,” 62.  

\(^{65}\) Davis and Slobodkin, “The Science and Values of Restoration Ecology.” Note: a response to Davis and Slobodkin rejected many of their premises and conclusions. See Winterhalder, Clewell, and Aronson, “Values and Science in Ecological Restoration-A Response to Davis and Slobodkin.”  

Values underpin a conservation ethic and inspire restoration work. The desire to retain diversity and halt species extinction are hardly contentious; ecological science is integral to understanding change as well as tenability of restoration projects. What is important is that ‘the science of ecology does not become biased toward one particular political or economic slant’ and that the ethical aspects of the practice are brought to light. As Van Wieren argues of restoration:

[...]nsofar as it is characterized by a healthy measure of critical reflection regarding its assumptions about a wounded and healing creation, it may be able to enter the public sphere with a distinctive vision of land’s and people’s regeneration.

This thesis argues that the democratic potential and ethical implications of ecological restoration will be determined by the capacity for critical reflection and inclusive participatory practice. It considers how restoration projects are shaped by conflicting local narratives and values and seeks to understand how restoration practitioners are negotiating ecological change.

**Perspectives on ‘people’ and ‘nature’**

Many factors drive the setting of restoration goals, including a wide range of ideas about nature, social norms, individual experience and ecological science. Running alongside scientifically-framed debate in ecological restoration is a discourse critiquing the role of people and social aspects of ecological restoration practice. It is undeniable that social aspects shape restoration goals, project acceptability and success. However, debate remains about how to situate the role of people and values in practice.

Contemporary ecological theories understand human activities as *internal* mechanisms of dynamic systems. Ideas of ‘nature in balance’ are shattered by the global recognition of the active role of Indigenous peoples, and indeed all peoples, on ecological systems. This is

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67 Winterhalder, Clewell, and Aronson, “Values and Science in Ecological Restoration-A Response to Davis and Slobodkin.”
heightened in the Anthropocene. Yet the foundations of restoration practice remain embedded in nature-culture dualisms and normative social constructions of ‘nature’.

Academic and novelist Raymond Williams describes nature as one of the most complex terms in the English language, experienced via many environmental notions and human relationships over time. Normative underpinnings of the ‘right’ kind of landscape have been explored by scholars in a broad range of fields including landscape sociology, environmental psychology, philosophy, place literature, human geography, and history—framed by ontological beliefs about nature and human relationships with it. Williams explains that people and nature must first be understood as separate ‘before any question of intervention or command, and the method or ethics of either can arise.’

The separation of nature from culture is a product of Western intellectual thought that represents just one of many ways to explain and order the material world. This separation, writes Van Wieren, has been challenged by ‘postmodern deconstructionist philosophers, theologians, and scientists.’ Furthermore, it is incompatible with many Indigenous peoples’ cosmological and ontological frameworks. It is not insignificant that the emergence of ecological restoration was situated in colonised ecologies marked by Judeo-Christian value systems that gave ‘man’ dominion over nature. Indeed, Van Wieran describes how ecological restoration is carried out as a public spiritual practice by Benedictine nuns, directly cultivating a sense of the sacred in relationships with the land. In practice, the notion of ‘man’s dominion’ is complicated in

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72 Williams, Culture and Materialism, 64.
73 For examples see Cronon, “The Trouble with Wilderness: Or, Getting Back to the Wrong Nature”; Reid and Beilin, “Making the Landscape ‘Home’”; Narratives of Bushfire and Place in Australia”; Head, Trigger, and Mulcock, “Culture as Concept and Influence in Environmental Research and Management,” 2005; van Holstein, “Transplanting, Plotting, Fencing: Relational Property Practices in Community Gardens.” Human-landscape interactions have been explored as a sense of belonging (Head and Muir, Backyard; Lien and Davidon, ‘Roots, Rupture and Remembrance: The Tasmanian Lives of Monterey Pine’), a sense of place (Relph, Place and Placelessness), for redemptive actions (Jordan, The Sunflower Forest: Ecological Restoration and the New Communion with Nature; Van Wieren, ‘Ecological Restoration as Public Spiritual Practice’; Van Wieren, ‘Restored to Earth: Christianity, Environmental Ethics, and Ecological Restoration’), and to maintain an imagined wilderness in contrast to urban life (Cronon, Uncommon Ground: Toward Reinventing Nature; Cronon, ‘The Trouble with Wilderness: Or, Getting Back to the Wrong Nature’), to name just a few.
74 Williams, “Ideas of Nature,” 75.
77 Van Wieren, “Ecological Restoration as Public Spiritual Practice”; Van Wieren, “Restored to Earth: Christianity, Environmental Ethics, and Ecological Restoration.” However, as we shall see the role of theology in contemporary Australian restoration practice is less overt. As historian Katie Holmes writes of Australia ‘[I]n a largely secular society, national redemption can be found not through religious observance, but through action.’ Holmes, “Redeeming Landscapes: Ireland and Australia,” 232.
ecological restoration, where humans (and indeed particular humans) are presented as the cause of degradation and disturber of ‘climax’ scenarios on the one hand, and an integral part of socio-ecological systems necessary for regaining health on the other. Within these complications lie important ethical implications explored in place studies.

Ecologist Choi asserts: ‘[W]e, not nature (although we make a significant reference to it), set the goals and scopes of restoration based on our own judgement.’ However, once in the world, material realities and non-human agency participate in restoration projects. Humanities thought is helpful here. Australian geographer Lesley Head highlights the disjunction between contemporary dominant discourses in the humanities and the sciences in relation to the nature/culture divide. Head posits that in dealing with the current planetary troubles, the sciences have missed the post-humanist turn. She writes:

[N]ow that the natural and physical sciences are finally convincing politicians that half a century of research really does show that human activity is the dominant influence on earth surface processes, the human sciences have entered their post-humanist moment and want to talk about the agency of trees and wolves. Many ecologists are recognizing that science is not enough and that we need a culture change in the way we use and manage resources, just after culture has been declared dead.

To Head, a phrase like ‘human impact’, popular in the Anthropocene, ‘is neither conceptually nor empirically strong enough for the complex networks of humans and non-humans now evident, in prehistoric as well as contemporary timeframes.’ As Head highlights, much of the interesting confrontation of the role contemporary human-environment relationships is coming out of restoration ecology. This should not be surprising, given its history of bracing ethical debate and its embedded engagement with the world. This demonstrates that the community is

79 This is the key message of post-humanism, a movement that argues for the agency of the non-human world to be recognised to reflect the coupled becomings of humanity and the environment as they manifest in reality. For example, see Pickering, “Asian Eels and Global Warming: A Posthumanist Perspective on Society and the Environment.”
80 Head, “Cultural Ecology: The Problematic Human and the Terms of Engagement,” 837. See also Merchant, The Death of Nature: Women, Science and the Scientific Revolution. As historian Gregg Mitman describes: The Death of Nature was a path breaking attempt to understand changing scientific ideas and attitudes toward the natural world within an ecological web of material, social, and economic relations, wherein the means of economic production, the exploitation of natural resources, and the social relations of society were not divorced from scientific thought.’ Mitman, “Where Ecology, Nature, and Politics Meet: Reclaiming The Death of Nature,” 498.
82 Head and Atchison, “Cultural Ecology: Emerging Human-Plant Geographies.”
at the coalface of bridging the nature/culture, science/humanities divide. Restorationists are unable to deny that ‘ecosystems and social systems that depend on them are inextricably linked.’

This link is increasingly recognised in ecological thinking and is evident within leading conservation organisations. For example, the mission statements of The Nature Conservancy (TNC) have significantly changed over the years:

TNC is an independent, member governed organization dedicated to saving America’s heritage of wild nature. Its specific objective is to preserve natural areas as “living museums” (1950s)
The mission of The Nature Conservancy is to protect the lands and waters on which all life depends (2010)

Similarly, the mission of the Society for Ecological Restoration (SER) reads: ‘[T]o promote ecological restoration as a means of sustaining the diversity of life on Earth and re-establishing an ecologically healthy relationship between nature and culture’ and the vision reads, in part, ‘to provide people with the opportunity to not only repair ecological damage, but also improve the human condition.’ The references to ‘nature’, ‘culture’, ‘knowledge’ and ‘science’, are all in the singular. Such language suggests a single nature, and a single culture. Opportunities exist to trouble such categorisations in order to articulate the plural voices within local places and expand the social and ethical benefits of the practice.

Within the restoration community, few publications consider the interconnectedness of ecologies and the presence of plural cultural perspectives and practices. For example, the founder of the Indigenous Peoples’ Restoration Network Dennis Martinez promotes ‘ecocultural restoration’, and ecologists Priscilla Wehi and Janice Lord argue for including ‘cultural practices’ in ecological restoration. Such work makes an important contribution to restoration discourse, but remains marginal to much restoration praxis, and, where incorporated, does so primarily for projects that involve Indigenous communities and/or effect livelihoods.

83 Resilience ecologist Carl Folke and others remind us that the lack of recognising this link is the cause of ‘many of the serious, recurring problems in natural resource use and environmental management’ Folke et al., “Reconnecting to the Biosphere,” 722.
For example, Temperton highlights that local community should be seen as ‘stakeholders’ in order to reduce the risk of restoration projects failing. In particular, social factors are considered when working in regions where local communities rely on the land for their livelihoods.

Despite the documented role of human societies, theologies, philosophies and practices in the shaping of ecological restoration, the social aspects of ecological restoration factor in the dominant guidelines primarily as elements necessary for facilitating better ecological outcomes. Social and ecological scientist Yadav Uprety and others have reviewed the inclusion of ‘traditional knowledge’ in ecological restoration. They concluded that its main contribution thus far is ‘in construction of reference ecosystems, particularly when historical information is not available; species selection for restoration plantations; site selection for restoration; knowledge about historical land management practices; management of invasive species; and post-restoration monitoring.’ They argue the further role of traditional knowledge in ecological restoration projects, which they see as complementary to science, and a powerful tool to enhance the ‘social acceptability’, economic feasibility, and ‘ecological viability’ of projects. Such limited involvement retains the colonial power structures of Western science ruling over and being served by alternative cultures and knowledges and limits the learning and healing potential of cross-cultural restoration work.

There is scope to expand social and cultural thought and practices in ecological restoration beyond Western views. Furthermore, there is great potential to account for Indigenous land practices and expand restoration to consider what anthropologist Michelle Cocks calls ‘biocultural diversity.’ Bio-cultural perspectives represent the multiple dimensions of culture that enable cultural resilience in the face of change. For biocultural diversity, cultural values extend beyond ‘natural areas’, to resources and livelihoods generated in peoples’ relationships with them.

89 Uprety et al., 225.
90 Cocks, “Biocultural Diversity: Moving beyond the Realm of ‘indigenous’ and ‘Local’ People,” 190.
Certainly, the ethical aspects of the practice are considered within the community. For example, philosopher Alan Thompson articulates different ethical positions for ecological restoration. For Thompson, righting wrongs can be motivated by the ‘harms view’, where value has been lost that some believe can be returned, the ‘human virtue view’ to include and improve culture, or, the ‘interpersonal justification’ based on a model of deliberative discourse with other members of the moral community where restoration fulfills obligations to one another.91 To Thompson, restoration is not something that we owe to the land but something that we owe to the moral community. Thompson limits the boundaries of the moral community to discursive (human) subjects, but others do not. Discussing the ethics of ecological restoration, environmental philosopher Daniel Spencer states: ‘I know for me it makes a difference about how I conceive restoration if I start with an expansive moral community with many moral interests that are more than human.’92

Restorationists are continually required to adapt their goals and their view of the moral imperative of why they participate in restoration. Historians William Jordan and George Lubick ask: ‘how does a society come to…recognize or confer value not only on the members of the community made valuable by their familiarity but also on the unfamiliar other?’ It is this quality, of an ‘enlarged sense of moral enfranchisement’, that they argue underpins what they call ‘ecocentric restoration’, and what becomes increasingly important as places undergo rapid change.93 As Cairns highlights, fears that restoration may encourage destruction ‘may be justified unless ecology is accompanied by a changed environmental ethic.’94 In 2010 sociologist Jan Dizard criticised the moral weight of historical baselines, asserting that outside of the declining ‘climax’ model, a point in history was merely one of many.95 Indeed, by aspiring to restore certain assemblages and diversity and cultures that dwell in particular ecologies, restoration communities assert meaning and value and care. It is important, therefore, that the assumptions and powers embedded in the practice undergo careful consideration.

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91 Thompson, “Panel: Ethics and Restoration: Where We’ve Been, Where We Are, and Where We’re Going.”
92 Spencer, “Panel: Ethics and Restoration: Where We’ve Been, Where We Are, and Where We’re Going.”
Opportunities to expand on discourses considering restoration values, ethics, and moral implications remain. Ecological restoration is a performative world-making practice. Restoration performs ‘the maintenance of the mental, psychological, moral, and spiritual structures.’ In doing so, Jordan and Lubick explain that one of the important qualities of restoration is the ‘questions it raises, and the ambiguities it dramatizes.’ Asking and answering questions is central to restoration practice. In this way it is a conversation between people, their environments, their communities and their histories. There is no reason why these conversations need to be limited to people nor to Western value systems. To philosopher Mikhail Bakhtin, self and culture are created through dialogue. Monological relationships mean that outcomes are fixed, whereas in dialogical engagements with place, outcomes remain open-ended.

This study considers restoration as a dialogue with layered histories and plural voices. It seeks to understand how meaningful encounters with local ecologies and confrontation of historical injustices can unsettle colonial mentalities, soften the nature/culture dualism and rescript social imaginaries.

The changing role of history in ecological restoration

At the core of debates in ecological restoration is the role of history and how it ought to be employed. This debate goes to the heart of the discipline and is more relevant than ever. As Hobbs and others put it:

[C]ultural norms of nature, conservation and restoration will evolve alongside changing ecosystems, and it is likely that our present beliefs require significant adjustment. Retaining the somewhat static view of ecosystems as particular assemblages in particular places will become increasingly unrealistic and is likely to shackle conservation and restoration efforts to ever more unrealistic expectations and objectives. A more dynamic and flexible approach might not involve throwing out all previously held values and norms entirely, but could require serious consideration of a range

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96 Keulartz, “The Emergence of Enlightened Anthropocentrism in Ecological Restoration.”
98 Jordan and Lubick, 5.
of approaches to deal with an increasingly uncertain future.  

‘Ecological restoration is rooted in ecological history’, assert ecologists Stephen Jackson and Richard Hobbs. Yet, they continue, ‘the environment has drifted, and so too have the targets.’ Seeking historical states demands an increasing body of resources, time and labour. Amidst global change, scientists working practically in this area contest the plausibility of returning to fixed ecological baselines and propose alternative uses of history in ecological restoration. As Hobbs and others explain, future decisions about investments will be shaped by changing cultural values, environments and livelihoods. They ask: ‘will we be capable of understanding what is best in a rapidly changing world?’ and emphasise that ‘[R]estoration will involve a complicated set of decisions rooted in historical understanding and open to many potential trajectories.’

In 2016, a path-breaking paper in the journal *Ecological Restoration* by Higgs and others presented a ‘version 2’ of the role of history: as a guide for restoration, rather than as an exact template. Higgs and his colleagues make three justifications: that Indigenous peoples’ influence on pre-settler ecologies destabilises colonial ideas of ‘pristine’ nature; that ecological systems are dynamic, with some reaching irreversible ‘novel’ states; and, that the dramatic social and ecological change of the Anthropocene has destroyed hopes of complete ecological return. Elsewhere, Hobbs has written on the importance of not creating false expectation of the abilities of ecological restoration that can further collapse hope. History in their ‘version 2’ acts as a tool to interrogate and construct narratives about such issues as ecological cycles, species mobility, ecosystem contingencies, mythologies and moral dilemmas that arise through restoration practice. In this form, history as a tool expands the interpretation of science, identifies key ecological legacies, and influences the choices available to restoration practitioners.

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100 Hobbs et al., “Novel Ecosystems : Theoretical and Management Aspects of the New Ecological World Order,” 604.
102 Hobbs, Higgs, and Harris, “Novel Ecosystems: Implications for Conservation and Restoration..,” 603.
105 Higgs et al., “The Changing Role of History in Restoration Ecology.”
Historical fidelity is no longer the sole focus in ecological restoration, but this does not mean that the role of history is redundant.\(^{107}\) This thesis explores how restoration projects can give voice to plural histories and layered narratives of place; how it can respond to them, and write new histories as well.

**Emerging trends in ecological restoration**

At present, academics, scientists, landscape practitioners and members of local communities embrace many notions of restoration, rehabilitation and land reclamation.\(^{108}\) In response to environmental devastation, ideas to return to ‘wilderness’, to care for ‘novel ecosystems’, and to re-introduce apex predators through ‘re-wilding’ are plentiful. With this in mind, it makes sense that restoration ecologists want to define and protect their field. In a time of ecological fluidity and interdisciplinarity, what constitutes ecological restoration? When is something allowed to be called ecological restoration, and when is it simply ‘weeding’ or ‘gardening’?\(^{109}\)

There exists a call to strengthen contemporary restoration science and practice based on the ability for ecological theories to be tested through restoration practice, and restoration practice to evolve alongside ecological theories.\(^{110}\) In 2007, Temperton reported a ‘double paradigm shift’ in restoration ecology, towards a more scientific foundation in the one direction, and towards a focus on socioeconomic and political aspects of restoration in the other.\(^{111}\) She explains that ‘[B]ecause science purports to be objective, academic ecologists have traditionally steered clear of getting involved with political or sociological issues relating to their work because they fear this could detrimentally affect their unbiased view.’\(^{112}\) This thesis argues that political and sociological factors enhance restoration potential and encourages scientists and practitioners to turn towards them.

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\(^{107}\) Higgs, *Nature by Design: People, Natural Process, and Ecological Restoration*.


\(^{111}\) Temperton, “The Recent Double Paradigm Shift in Restoration Ecology.”

\(^{112}\) Temperton, 345.
Attempts to define ecological restoration practices to offer guidance have been made. This has been done with varying degrees of flexibility. For example, the Society for Ecological restoration Primer (hereafter ‘Primer’) outlines what is meant by ecological restoration, and how it differs from conservation biology and other landscape alteration projects.\textsuperscript{113} Elsewhere, the SER’s \textit{Code of Ethics} (2012) outlines ethical conduct under the sub-categories: ‘advance ecological restoration’, ‘develop and use knowledge’, ‘serve as ambassador’, ‘promote fairness and equity’ and follow ‘standards of conduct’. Also in 2012, ecologist Karen Keenleyside and others produced the joint publication: \textit{World Commission on Protected Areas–SER Ecological Restoration for Protected Areas: Principles, Guidelines and Best Practice} (2012). This work emphasises three guiding principles: that restoration be ‘effective in re-establishing and maintaining protected area values’ ‘efficient in maximizing beneficial outcomes while minimizing costs in time, resources, and effort’ and ‘engaging through collaboration with partners and stakeholders, promoting participation and enhancing visitor experience.’\textsuperscript{114} The above efforts all focus on the principles, ethics and conduct of ecological restoration, to be applied and negotiated as appropriate for local ecological and social contexts.

In contrast, recent efforts have been made to draw strong boundaries around what classifies as ecological restoration and to produce methods with which to measure and quantify success. In 2016, the \textit{Australian Standards for Ecological Restoration} was published. The intention was to provide ‘best practice’ guidelines and to differentiate ecological restoration from other ‘greening’ projects of land reclamation, rehabilitation or regeneration. The standards were developed through consultation and partnership with a broad stakeholder group from ecological restoration and conservation management fields.\textsuperscript{115} Passionate discussions about what the

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\textsuperscript{114} Keenleyside et al., “Ecological Restoration for Protected Areas: Principles, Guidelines and Best Practices.”

\textsuperscript{115} This included: Australian Association of Bush Regenerators, Australian Institute of Landscape Architects, Australian Network for Plant Conservation, Australian Seed Bank Partnership, Bush Heritage Australia, Gondwana Link, Greening Australia, Indigenous Flora and Fauna Association, The Nature Conservancy (Advisor), Trees for Life, Trust for Nature (Vic) and WetlandCare Australia. The Indigenous Flora and Fauna Association supports indigenous plants and animals. No explicit Indigenous peoples or community’s interests were represented in the stakeholder process. See SERA, “National Standards for the Practice of Ecological Restoration in Australia,” Issue Supplement S1.
\end{small}
standards should and should not include ensued, reiterating the fluidity of restoration boundaries.116

Following the Australian Standards for Ecological Restoration, the International Standards for the Practice of Ecological Restoration were developed.117 Both the Australian and international standards for ecological restoration work to define those projects that fit within the ‘ecological restoration’ brand, and those that do not. They promote a five-star recovering wheel covering six ‘key concepts’ to measure progress. Such approaches increase the capacity for cost-benefit analyses and argue professionalisation at a time with ecological restoration is increasingly enshrined in policies as a tool to address urgent environmental decline.118 Particularly in situations where restoration is being carried out as a technical and legislative exercise, measurable boundaries make sense.119 However, such an approach comes with significant risks.

First, by further professionalising ecological restoration as a science that can be put into a neat star-rating wheel, the standards can reinforce Higgs’ ‘technological restoration’, whereby restoration is treated as commodity.120 Indeed, as philosopher Josef Keurlartz points out, ‘today’s dominant trend in thinking about ecological design is definitely technological.’121 Second, by turning to generalising principles, the standards remove the centrality of local place-based emergence, brushing over relationships with place as restoration as conversation.122 Third, the role of the human/social aspects (of ethics, cultures, knowledges and politics) are reduced to solely factors to facilitate better ecological outcomes. It seems that again, that supposedly ‘objective’ ecological science and historical reference ecosystems have become the pillars that the restoration community stand on when shaken by doubt. Despite acknowledgement that historical states are just one moment in time, often unachievable, and

116 I participated in one of the working group meetings on the draft standards in March 2015. I witnessed firsthand the heated debates about definitions, boundaries and systems promoted within the standards.
117 McDonald et al., International Standards for the Practice of Ecological Restoration – Including Principles and Key Concepts.
119 Increasingly, ecological restoration is motivated by legislative requirements following land development or mining. In such cases, the social aspects of restoration are vastly different from small, local projects driven by community groups, and these differences are important to articulate. See Perrings et al., “Advances in Restoration Ecology: Rising to the Challenges of the Coming Decades.”
120 Higgs, Nature by Design: People, Natural Process, and Ecological Restoration.
121 Keurlartz, “The Emergence of Enlightened Anthropocentrism in Ecological Restoration,” 49.
politically fraught, many restoration projects remain ‘driven by commitment to historical qualities and re-establishing salutary past relationships between people and ecosystems.’

In 2018, a detailed critique of the ‘standards’ approach was offered by Higgs and others. Their central argument being that a standards-led rather than principles-led approach can hinder adaptability, flexibility and innovation; discourage restoration efforts in heavily degraded areas; exclude important, yet unquantifiable social and cultural categories of concern; avoid facing real complexity in diverse contents, and, impede the continual development of a relatively young practice. These authors reiterate the strength of a principles-based approach, first articulated by Keenleyside and others to allow restoration to retain more flexibility and inclusivity so necessary in the present time.

Scholars from further afield have proposed alternative frameworks for thinking differently about restoration in the Anthropocene, including restoration of ‘moral value’, attention to ‘layered landscapes’ and ‘landscape legacy’, and also contributed thoughts on alternative names and motivations, including ‘reconciliation ecology’, ‘intervention ecology’ and ‘renewal ecology’.

These neologisms reflect the limited scope of the name ‘restoration’ in capturing the expansive thought contributed to the practice from multiple disciplines as it becomes popular and central to activities and discourses of hope amidst environmental change. This study takes alternative framings and languages as critical tools to encourage reflexivity and evolution of the practice. However, it is not the intention of this work to present yet another alternative for an established and significant field. Instead, it contributes methods through which the powerful political and ethical work of ecological restoration can be expanded and diversified.

Enlivening a politics of practice

By embracing its social and political origins and capacities, ecological restoration would be less troubled by conundrums of philosophical critiques and changing historical baselines and would be empowered to actively contribute to social and political change. In 2017, David Greenwood published a paper that reconsidered Aldo Leopold’s 1934 University of Wisconsin Arboretum speech, often cited as the first public articulation of the rationale for ecological restoration. Greenwood emphasises that ‘[F]or Leopold, restoration involved not only the expression of social and ecological values, but also public critique of the *destructive social forces* that make restoration necessary.’ As Greenwood argues, Leopold ‘would have viewed it as quintessentially pragmatic to call out—publicly and explicitly—the forces that make it [ecological restoration] necessary.’ As we shall see, these forces weave themselves into restoration dialogue and practice. Unchecked, they have the capacity to further ecological and social ills and take away from the capacity for ecological restoration to cultivate meaningful and ethically conscious relationships with place, to enhance human ecology as well as the functional ecology of the non-human world.

Recent focus on technical standards can overshadow the significant political work of ecological restoration. As Higgs states: ‘[S]cientific and technical acumen is necessary for successful restoration, but insufficient.’ We need, as philosopher Marion Hourdequin and geographer David Havlick advise: ‘[A] richer, more empirically informed analysis of the social, ecological, historical, political, and institutional contexts in which such restorations take place’ in order to identify ‘important questions that might be missed by traditional ethical analyses of restoration.’ The important questions alluded to speak to the politics of ecological restoration that shapes the role it plays in the broader cultures within which it operates. These contexts matter greatly to ethical outcomes. As Light and Higgs powerfully confer: ‘[R]estoration as the

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126 Callicott, “‘The Arboretum and the University’: The Speech and the Essay”; Meine, *Aldo Leopold: His Life and Work.*
128 Greenwood, 684.
mere application of scientific technique—or as the extension of a global paradigm—anywhere, anytime, no longer make sense.¹³¹

Studies of ecological restoration practices in the world provide insight into the moral, ethical, and practical considerations that both challenge and enrich restoration work. Where epistemologies of science view practice as a ‘mere conduit for knowledge of the world’, by contrast, epistemologies of practice take practice as ‘the vital element of knowing in the world.’¹³² An opportunity exists for the ecological restoration field to embrace uncertainty and the messiness of real-world scenarios. Ecological restoration is historically well-equipped to pursue such thinking within the realm of science. By taking time to sit with ethical complexities and uncertainties, and by responding in locally-responsible ways, restoration will be positioned as a practice powerfully equipped to assist in important ecological, cultural and political work of our time.

Following Higgs and others (2018), this work explores local complexities that cannot be quantified. Further, through place-based studies, it investigates how ecological restoration projects participate within complex systems of power, politics and contested histories. It argues that it is the responsibility of the field to critically reflecting on the role of restoration work in the promotion or resistance of hegemonic structures and dominant power relations. This urgent work can become easily lost through a technical ‘standards-first’ definition that limits a wide-reaching practice.

As documented in this thesis, (and argued by Light and Higgs, and contra Jordan¹³³) ecological restoration is not inherently democratic. The democratic and political potential of ecological restoration resides in its capacity to react in a participatory and reflective way, within, and in response to, localised and particular histories, ecologies, cultures and communities.

This thesis argues that, as much as leaning towards strong science (necessary to understand ecological decline and guide strong, well-informed and appropriate restoration projects),

contemporary ecological restoration also needs to lean into social and political cultures. In this study, local place *histories, affective restoration practices*, and critical *reflections* are presented as powerful tools for expanding the recuperative potential of ecological restoration. They help participants articulate and enable resistance to the ‘destructive social forces’ to which ecological restoration responds, and, they identify passions and skills that exist in the local community that can be engaged with and supported through the practice. Through their employment, ecological restoration is able to attend to harms of the *past*, as well as confront damaging engagements with the *present*.

The particularities of ecologies, histories, cultures and communities are the foundations of restoration practices. Before we visit individual sites to tease these out, the Australian context for ecological restoration must be introduced.
A2 | Setting the Australian context

Ecological restoration projects work in particular places, with particular ecologies. They intervene in specific moments and in communities made up of many stories and many lives. Speaking about restoration theoretically simplifies the complexity of local context and environmental and cultural histories. So far, this thesis has paid attention to the trends in the science and the practice of ecological restoration in a conceptual realm, yet, restoration cultures are continuously co-produced within deep-rooted place-based relationships. In addition, much of the debate about restoration outlined thus far has been born of Northern hemisphere experiences, or in discourse of international conferences.

The complex ecological, cultural, imaginative and material steps towards degradation must be unpacked if the ethics of ecological restoration are to be deliberated. This section introduces the Australian experience and provides the setting within which ecological restoration in Australia operates. It opens by outlining the troubles with a fixed historical baseline for ecological restoration. It then gives background to the material and cultural histories that were denied through European settlement and the expansion of industrial agriculture. It outlines the evolution of and values behind conservation in Australia and the dominant narratives that endure in environmental management.

Troubling ‘Year Zero’

Boundaries based on settler-temporalities are deeply embedded in the restoration ethic, though often lack both local specificities, as well as critical reflection of their inherent politics. The way that time is imagined in restoration is framed by Australia’s settler past. Such fixed boundaries orient around what anthropologist Deborah Bird Rose defines as a ‘year zero’ that is performed through settler-colonial acts. Along with Rose, historian Greg Dening speaks

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134 This work responds to a call to destabilise European and American centric homogenisation of modernity as encouraged by Juanita Sundaberg: Sundberg, “Decolonizing Posthumanist Geographies.”
135 This work is necessarily selective, as an extensive range of literature over an extensive range of disciplines speaks to these histories.
of the need to overcome this ‘zero point’, that divides the moment ‘between a Before, when an indigenous culture was in its pure form, and an After of the encounter, when it was somehow adulterated.’137 The foundational myths of ecological restoration have relied on and reinforced such ‘zero points’, but opportunities exist to trouble them.

In Australia, notions of ‘pristine’ nature are often associated with pre-invasion characteristics, shaped by normative cultural constructs and misconstrued social and ecological imaginaries. Deep time histories of the supercontinents Gondwana or Pangea are never desired baselines.138 Instead, the year 1788—when the first fleet arrived from England into Botany Bay—is earmarked as the beginning of national imaginaries. As sociologist Ruth Beilin and geographer Simon West assert, in Australia ‘1788 is the moment that Antipodean ecological time froze’, constituting the ‘desired state’ for environmental management.139

A ‘pre-human’ and ‘balanced’ ecological state is completely out of check with Australian cultural-ecological histories.140 The idea of nature that supported the invasion by European settlers, as unoccupied, a-historical, and frozen in settler time has been increasingly challenged.141 Colonial demarcations of ‘original’ and ‘nativeness’ demonstrate how settler constructions pervade the environmental sciences and demand attention. As cultural philosopher Helen Verran writes:

[T]hose scientists who subscribe to the notion of timeless, stable, climax ecosystems criticize Aboriginal practices. As they see things, working with Aboriginal communities compromises science. In contrast, environmental scientists who take ecosystems as dynamic and unstable systems, where any particular environment is a historical outcome of events and conditions, tend

137 Dening, Beach Crossings: Voyaging across Times, Cultures and Self, 168 in Griffiths, The Art of Time Travel: Historians and Their Craft, 121.
138 ‘Re-wilding’ projects, largely used in North America and Europe, do turn to deeper histories. For example, ‘Pleistocene rewilding’ draw on longer historical records. For discussions on Pleistocene rewilding and its problematic elements, see: Jørgensen, “Rethinking Rewilding”; Donlan et al., “Pleistocene Rewilding: An Optimistic Agenda for Twenty-First Century Conservation.” The term ‘re-wilding’ is becoming more popular in Australia but is predominantly used to refer to the re-introduction of small marsupials into conservation areas (managed re-introduction processes).
140 Head, “Cultural Ecology: The Problematic Human and the Terms of Engagement.”
141 Rose, Nourishing Terrains: Australian Aboriginal Views of Landscape and Wilderness.
to credit the effectiveness of Aboriginal land management regimes.¹⁴²

These reflections reinforce the capacity of restoration to be a strongly cultural project, part social-engineering, born of theological ideas, nostalgia, naturalism, settler-colonialism and manipulation of ecosystems underpinned by cultural ideologies and myths (particularly of the ‘balance of nature’).¹⁴³ Importantly, ecological restoration is:

not an invention of indigenous people, who have made themselves at home in an ecosystem, but of newcomers, a response to the mixture of regret, nostalgia, and curiosity some feel on looking back at the “original” landscape they and their predecessors have altered, often beyond recognition.¹⁴⁴

The humanities provide us with tools to critically evaluate temporal baselines, but also historical scholarship has been implicit in creating divisions. Amidst the timelessness of Australia, explains historian Tom Griffiths, historians and archaeologists have searched for time. Australian author Eleanor Dark ‘dramatised the epic encounter of Aboriginal Australians with European settlers as the coming of time to a timeless land’ Griffiths describes.¹⁴⁵ Muir critically reflects: “[O]nly the arrival of whites could animate or bring time and history to the land.”¹⁴⁶ Some archaeologists and historians tell tales of ‘pre-history’, but they are framed as histories that came before civilisation, therefore kept safely away from troubling the dominant settler narrative of terra nullius. In historicising and romanticising Australian Aboriginal cultures, in making them into ‘pre-history’, Aboriginal peoples are robbed of a future. Significantly, the year zero reinforces a simplistic notion of an Australia made up of a dichotomised Indigenous (black) and non-Indigenous (white) population. As Head and others have articulated: ‘in keeping with more dynamic and fluid understandings of culture, it is increasingly clear that neither indigenous nor ‘White’ Australia is a monolithic category. Nor are they the only ones important to consider.’¹⁴⁷ Many different immigrant groups make up

¹⁴² Verran, “‘A Postcolonial Moment in Science Studies: Alternative Firing Regimes of Environmental Scientists and Aboriginal Landowners,’” 5. It is important to note that crediting Aboriginal land management regimes can still hold such regimes distinctively in the past, as part of an historical landscape.


¹⁴⁵ Griffiths, The Art of Time Travel: Historians and Their Craft, 17. Importantly, as Griffiths notes, the timelessness that Dark evokes is not one of being outside of culture, but a powerful humanistic vision that presents another way of seeing and relating to the land.

¹⁴⁶ Muir, The Broken Promise of Agricultural Progress: An Environmental History, 68.

¹⁴⁷ Head, Trigger, and Mulcock, “Culture as Concept and Influence in Environmental Research and Management,” 2005, 256.
contemporary Australian society and it is within local communities and public spaces that their
coe-existence comes to life.148

Always, settler Australia’s histories have presented a timeline broken: before and after, wild
and civilised, untouched and altered. Historian Grace Karskens writes that ‘in settler history we
seem to be constantly searching for beginnings.’149 For either cultural understandings or
scientific endeavours, there is no singular moment of change. Indeed, Aboriginal people arrived
in Australia in waves themselves, meaning there was no single mass migration or moment of
significant human ecological impact.150

Pinpointing a generic moment of colonial impact is impossible. The European settlement of
Australia happened at different times in different ways across different Indigenous nations.
Ecological decline following European settlement did not occur in a precise frontier, but in a
series of associated events of different paces, causes, responses and associations across the
continent, within differing ecological and cultural contexts. The impact of introduced animals
and diseases created rapid decline of Aboriginal people, land management practices, and
ecosystems systems. The resulting impacts on ecological condition occurred prior to European
documentation of the land. For example, the cat Felis catus did not spread from initial European
settlement, but rather from the ships that arrived later. Ecologist Ian Abbott records a series of
coastal introductions during the period of 1824–86.151 ‘[I]t is clear’ wrote Henry Reynolds, ‘that
pioneers were preceded into the interior by feral animals and a range of European
commodities.’152 Sheep and cattle have been described as the ‘shock troops of empire.’153 As
archaeologist Tim Flannery writes ‘[T]he European settlement of Australia occurred so swiftly,
and altered the land and indigenous cultures so profoundly, that it can be difficult to imagine
what the country was like before the first white settler walked ashore.’154

148 Opportunities for multiple cultures to access and connect with local place and with one another are central to multicultural
Australia. See Goodall et al., “Recognising Cultural Diversity: The Georges River Project in South-Western Sydney.”
150 See Griffiths, Deep Time Dreaming: Uncovering Ancient Australia.
151 Abbott, “Origin and Spread of the Cat, Felis Catus, on Mainland Australia, with a Discussion of the Magnitude of Its Early
Impact on Native Fauna.”
152 Reynolds, The Other Side of the Frontier: Aboriginal Resistance to the European Invasion of Australia, 18.
153 Bonehady and Griffiths, Words for Country, 228.
154 Flannery, “This Extraordinary Continent,” 1.
Ecological documentation was biased. What was perceived and documented as a ‘baseline’ in the historical record was done so through unfamiliar eyes. As historian Libby Robin writes: ‘[I]n a nation built by emigrants from elsewhere, Australia’s characteristics rest on comparisons with unlike places.’\textsuperscript{155} As Griffiths asserts, ‘[C]olonial scientists and collectors found human antiquity in Australia elusive because the typical cultural clues were absent…there seemed to be no domesticated plants or animals other than the dingo.’\textsuperscript{156} Kangaroos were drawn with fox heads, trees were distorted; the land was unusual.\textsuperscript{157} Importantly, in a land of ‘boom and bust ecologies’ the precise moment of local contact matters. ‘Seasons in this place confound even such basic categories as ‘land’ and ‘water’, Robin continues, “[T]he Australian arid zone is the most variable place in the world.”\textsuperscript{158} The classification of Australian species was in line with families and genera framed by Linnaeus’s Swedish system poorly equipped to cope with the task. With new genetic research, classifications of Australian species have been regularly updated because of vastly different evolutionary lines.\textsuperscript{159} Furthermore, colonisers related to the Australian land and waters in particular ways so as to reinforce and support their intervention.\textsuperscript{160} 

Historical knowledge about pre-European-settler land conditions is of course not without value, particularly in setting Australian nature in an international context. Historical ecologists contribute to knowledge of environmental change, of what has been lost, and of what to strive for. However, like all histories, these presentations are incomplete and viewed through a particular frame of reference, with particular political constructions of power. Environmentalists are not necessarily aware of the political elements of a ‘year zero’, which reinforces the ‘balance of nature’ myth. As Ian Scoones explains:

\[E\]nvironmental movements around the world emerging from the 1970s have, not surprisingly, taken on these metaphors and their associated rationales for particular forms of action. Popular

\begin{footnotesize}
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\item Robin, \textit{How a Continent Created a Nation}, 6.
\item Griffiths, \textit{The Art of Time Travel: Historians and Their Craft}, 64.
\item For examples of early European drawings of Australian fauna see Cowley and Hubber, “Distinct Creation: Early European Images of Australian Animals.” A settler-colonial reading of the Australian landscape was limited to being interpreted within a certain cultural lens. Useful here is the theory of an ‘historically effected consciousness’ by German philosopher Hans-Georg Gadamer (1900–2002). Writing on the study of text, Gadamer describes a ‘fusion of horizons’ (Horizontverschmelzung) whereby a scholar reads of the text in a way that makes sense of their own experiences and background. See Gadamer, \textit{Truth and Method}.
\item Robin, Dickman, and Martin, \textit{Desert Channels Impuls. to Conserv.}, 70.
\item For fascinating insight into the role of national identity in revisions of botanical nomenclature see: Carruthers and Robin, “Taxonomic Imperialism in the Battles for Acacia: Identity and Science in South Africa and Australia.”
\item Griffiths and Robin, \textit{Ecology and Empire: Environmental History of Settler Societies}.
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environmentalism has many guises. But whether in variations of technocentric, ecocentric, managerialist, or ethical/spiritual forms, the balance of nature theme is never far from the surface.  

This is true of ecological restoration, where ideas from equilibrium ecology underpin and justify moral boundaries and technical activities. In Australia, the sanctity of a ‘pristine’ nature separated from culture enables the silencing of certain voices and reaffirms the power of imperial science and the settler state. Human ecologist Ben Gleeson explains the social and ecological damage associated with promoting a world that is “‘out there’, beyond whatever boundaries we may wish to imagine.’  

There is clearly a need to pay attention to these boundaries shaped by settler-colonial and modernist-industrial mentalities. Situated, complex, plural and contested histories that pay attention to material realities, ecological limits and cultural ecologies can aid in this cause. Accepting the reality of Australian ecological and cultural systems is the first step in unwinding past and present degradation.  

**Ancient histories**  

Australian ecologies are manifestations of up to 3.9 billion years of evolution; of continental drift, vast periods of heating and cooling, deposition and erosion, eruption and extinction. The resulting ecological ‘exceptionalism’ is ‘attributed to the country itself.’  

Once a part of the great southern supercontinent Gondwana, the makings of today’s Australian continent broke off approximately 30 million years ago, having significant implications for its ecologies. First, the Australian continent is rarely active, exposed to high temperatures, and isolated, meaning its soils are ancient, dry, and nutrient poor. The movement of Pleistocene glaciers over the last two million years enriched soils in America. About this comparison, historian and director of the Land Institute in Kansas Wes Jackson writes that ‘[W]e are fortunate; Australia is not.’  

Second, a northern continental movement and a long period of drying promoted particular adaptations. Where once clothed in Gondwanan species typified by ferns, palms and pines, the warmer Australia was overtaken by drought-tolerant, fire-adapted...
genera. Increased lightning and burning approximately 20 million years ago saw the decrease in coniferous forests and the inland movement of Eucalypts (Eucalyptus spp.). Adaptations like sprouting lignotubers of Eucalypts, re-sprouting of grasses (such as Poa spp., Stipa spp. and Themeda spp.) and woody, smoke-activated capsules of Hakea spp. allowed plant species to thrive in new disturbance ecologies. Third, resulting from isolation and ecological pressures, Australian plant and animal species are approximately eighty per cent endemic (not occurring anywhere else on the planet). This makes their local conservation critical to the continuation of species. Fourth, the physiological and climatic processes of Australia are complex, confusing and confounding. ‘It is not just biodiversity and climate that are exceptional in this country’, writes Robin, ‘[E]ven the way water flows defies logic.’ These characteristics differentiate Australian ecosystems from much of the world, and are fundamental to the ecological undoing following the introduction of settler mentalities and practices.

Across Australia, the mass herding inland by hard hooved animals and their continued overstocking decimated large tracts of soil, vegetation and water bodies creating change ‘as great as those of the great climatic shifts of the Pliocene.’ The impacts of European settlement plagued the continent and its people and resulted in Australia having, as Robin puts it, the ‘doubtful honour of leading the world in mammalian extinctions over the past century, and [having] the highest number of threatened species on the planet.’ ‘It was not’, says Griffiths, ‘the simple geographical boundary of open-ocean that primarily shaped Australian civilisation, but the complex ecological reality of soil and climate.’

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167 Gill, “Fire and the Australian Flora: A Review.”
168 Massy, Call of the Reed Warbler: A New Agriculture and New Earth, 16. High levels of endemism impact ecological processes—encouraging mutualism, spatial heterogeneity and temporal variability—and resulting in needs for environmental management to focus on local particularities and bioregionalism. See Braithwaite, “Australia’s Unique Biota: Implications for Ecological Processes.”
170 Gott, Williams, and Antos, “Humans and Grasslands – a Social History,” 16.
171 Robin, Dickman, and Martin, Desert Channels Impuls. to Conserv., 79. Furthermore, the absence of many apex predators for much of Australia’s evolutionary history meant small mammals and marsupials were ill-equipped to cope with the introduction of foxes and cats.
172 Griffiths, The Art of Time Travel: Historians and Their Craft, 82. In this way the history of settler Australia can be read as an experiment in environmental determinism, and the agency of the non-human world remains central to relationships with ecology today.
the very nature of its dust, soil and sand—that histories of evolution, adaptation and degradation are held. The biophysical particularities of the Australian landmass, coupled with the ongoing cultures and practices of Indigenous peoples, make the impact of settler colonialism in Australia unique in its calamity.

**Cultural ecologies**

Australian ecologies are unique in the extent of their continuous co-evolution alongside the oldest living human cultures in the world. For over 65,000 years, Australian Aboriginal peoples having been using, manipulating, and participating in the dynamic and diverse ecological systems across the continent, weaving together people and place through complex and manifold systems of culture and lore. Cultural practices shaped disturbance ecologies, and ecologies shaped cultures. Fire was to become integral to Aboriginal cultures, to keeping country clean, and to creative fresh life—a regeneration and restoration. Sylvia Hallam, in her 1975 work ‘Fire and Hearth’, provides detailed accounts of the role of fire in shaping Australian ecosystems and the intricacy and diversity of Indigenous people’s roles in ecological manipulation. In particular areas, regular burns favoured grasslands and open grassy woodlands over dense forest. Hallam explains that ‘most of our “virgin” bush is fire-climax vegetation, resulting from both Aboriginal burning and to a lesser extent, lightning causes.’ Importantly, the use of fire by Indigenous people is not just as a mechanical tool. It is central to rites, responsibilities, ritual and lore. Aboriginal Australians managed both fire-loving and fire-sensitive vegetation and burning practices shaped Australian biota. The use of fire differs between Aboriginal Nations and ecological

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173 These histories are fundamental to any discourse on Australian ecological restoration and are the reason that this thesis takes them as its guides.
174 Griffiths, *Deep Time Dreaming: Uncovering Ancient Australia*. ‘Lore’ is the term used to differentiate Indigenous lore from Western law.
179 Price and Bowman, “Fire-Stick Forestry: A Matrix Model in Support of Skilful Fire Management of Callitris Intratropica R. T. Baker by North Australian Aborigines”; Bowman, “Tansley Review No. 101: The Impact of Aboriginal Landscape Burning on the Australian Biota.” At present some of the last remaining stands of Gondwanan vegetation in world-heritage listed regions of Tasmania are at risk of extinction following extensive wildfires that have been accelerate through lack of
systems. This nuance is often missed in narratives that glorify and generalise Indigenous burning.¹⁸⁰

Since the 1990s, a combination of ecological research, archaeological, and anthropological studies, narrowed into a more thorough understanding of the role of Aboriginal people in shaping Australian ecosystems and scientists increasingly recognised that they had something to learn from the continent’s first peoples.¹⁸¹ Discussing more recent history, archaeologist Ian McNiven describes three major processes for manipulating country - the inclusion of plant and animal material, exclusion through separating plants and animals, and manipulation of landscape transitions, through fire and other means.¹⁸² Australian Aboriginal people also enacted complex trade routes within and beyond the continent and moved plant and animal specimens long before European settlement.¹⁸³ For example, the historical movement of Cabbage palms of the genus *Livistona* (initially explained by Western science as climate-induced migration) was the result of people actively moving them between regions.¹⁸⁴

The growing recognition of Indigenous peoples’ land management calls up a pre-settlement civilisation, so long denied within the narrative of ‘*terra nullius.*’ Until the middle of the twentieth century many Australians believed that Aboriginal peoples had occupied the continent for a maximum of only a few thousand years; the dismissal working to justify their invasion. Robin explains that: ‘[T]raditional Aboriginal understandings of ‘country’, and their idea that nature and culture are inseparable, fitted so poorly into institutions of settler society that the Aboriginal people were treated as ‘outside society’ and not even recognised as

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¹⁸¹ This shift is evident in report: Pigott and The Planning Committee on the Gallery of Aboriginal Australia, “MUSEUMS IN AUSTRALIA 1975: Report of the Committee of Inquiry on Museums and National Collections Including the Report of the Planning Committee on the Gallery of Aboriginal Australia.”

¹⁸² McNiven, “Inclusions, Exclusions and Transitions: Torres Strait Islander Constructed Landscapes over the Past 4000 Years, Northeast Australia.”

¹⁸³ For example, see Macknight, “Macassans and Aborigines.”

¹⁸⁴ Bowman, Gibson, and Kondo, “Aboriginal Myth Meets DNA Analysis.”
Australian citizens until 1967. Western cultural ideas about humanity’s place in nature are impaired by gross misunderstandings and misrepresentations of Indigenous peoples’ role in ecological relationships. Further, the denial of these relationships serves political purposes. In Australia, Aboriginal cultures were vehemently denied it in order to justify invasion, and both in Australia, and in many parts of the world this denial continues. 

In 1975, Hallam identified Aboriginal agricultural practices, writing:

[I]t is usual to consider the Aborigines too ‘primitive’ to have become farmers. But cereal farming as practiced by European communities is but one highly specialised mode of ecological modification. Aboriginal groups did modify the structure and distribution of floral and faunal communities…The Aborigines had indeed ‘worked’ for their crop of grass and their stock of herbivores. Their effects on the landscape may have been more crucial than we can yet fully demonstrate.

A recent flush of writing on Indigenous land relationships including Indigenous scholars themselves has raised public awareness of diverse Aboriginal land practices. Bruce Pascoe’s popular 2014 book, *Dark Emu, Black Seeds: Agriculture or Accident?* detailed histories of Aboriginal agricultural relationships in Australia through accounts of highly attuned agriculture (including cereal farming), aquaculture, housing, storage and preservation, fire, and culture. Pascoe brings to light the displacement of locally optimal sedentary agricultural cultures. Such perspectives complicate notions of primitive hunter-gatherers that have dominated Indigenous histories from the settler gaze. They also counter myths of a ‘noble savage’ people living in ‘balance’ with nature. Further troubling to this myth is that around 46,000 years ago following the colonisation of the continent by humans during the Pleistocene period, the continent’s megafauna became extinct. As anthropologist Raymond Hames points out, the

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185 Robin, *How a Continent Created a Nation*, 7. More specifically, what the 1967 referendum did was allow Aboriginal people to be counted in the national census. Negotiations of Indigenous peoples’ rights and citizenship began before and continued much after 1967. The Commonwealth vote was formally opened to Aboriginal peoples through the *Commonwealth Electoral Act 1962*. See: Gardiner-Garden, “The 1967 Referendum – History and Myths.”


188 Pascoe, *Dark Emu: Black Seeds: Agriculture or Accident?*

189 The presentation of Indigenous peoples as ‘noble savages’ has worked both for and against conservation science.

190 Fraser et al., “New Ages for the Last Australian Megafauna: Continent-Wide Extinction About 46,000 Years Ago.” This has been the topic of heated debate. See Martin, “Prehistoric Overkill”; Flannery, *Future Eaters: An Ecological History of the Australasian Lands and People*. For a powerful reflection on the politics of ‘hunting the Pleistocene’ see Griffiths, *Deep Time*
theory of Indigenous peoples living in harmony with their environment was both a precluding assumption of ecological equilibrium theories and popularised by them. It is not inconsequential then, that just as the sciences are grappling with what ‘new ecologies’ mean for conservation, ideas of Indigeneity are also being reimagined.

There is, evidently, enormous ‘trouble with wilderness’ in the Australian context. The interruption of land management and tradition, and the forced removal and exclusion of Aboriginal peoples from their lands damaged intricate relationships with country. As Rose attests, for the Indigenous people she has worked with, wilderness is land unkempt, unmanaged and uncared for, and white-fella ‘wilderness’ is ‘untidy’ Country. Les Murray writes that the ‘wilderness we now value and try to protect’, ‘came with us, the invaders. It came in our heads, and it gradually rose out of the ground to meet us.’ This reinforces American preservationist Roderick Nash’s view that wilderness is a state of mind as much as an area of land. Indeed, the use of the term ‘wild’ is itself complicated. Rose explains that for the Aboriginal people she has worked with, ‘wild’ has negative connotations. She writes ‘[W]ild people (coloniser) make wild country (degrading, failing). Colonisation and the wild form a matrix: settler societies and their violence.’

Australian Indigenous peoples are now understood to have been key participants in a dynamic system highly attuned to local biophysical limitations. The language used to convey Indigenous peoples’ connections to land fail to convey the entire story. The geographical concept of a ‘cultural landscape’ has been adopted widely in environmental management to recognise Indigenous peoples’ participation in ecological processes. However, as Head explains, while it

_Dreaming: Uncovering Ancient Australia._ For a rebuttal of this hypothesis see: Wroe et al., “Megafaunal Extinction in the Late Quaternary and the Global Overkill Hypothesis.”

Hames, “The Ecologically Noble Savage Debate.”

See Hames. See also Langton, _Burning Questions: Emerging Environmental Issues for Indigenous Peoples in Northern Australia._

See Cronon, “The Trouble with Wilderness: Or, Getting Back to the Wrong Nature”; Langton, “Art, Wilderness and Terra Nullius”; Robin, _How a Continent Created a Nation._

Rose, _Nourishing Terrains: Australian Aboriginal Views of Landscape and Wilderness._


Nash, _Wilderness and the American Mind._

Rose, _Reports from a Wild Country: Ethics for Decolonisation_, 4. This notion of ‘wild’ contrasts with a resurgence in the use of the word in land management and the environmental movement that refer to ‘wild’ places, urban ‘wilds’ and ‘re-wilding’. For example, for a rich expression of urban ‘wilds’ and reflections on ‘wildness’ see Van Horn and Hausdoerffer, _Wildness: Relations of People and Place_; Van Horn, _The Way of Coyote: Shared Journeys in the Urban Wilds._
has ‘played an important role in “putting people in” to landscapes where their influence or presence was elided in different ways’, it did not mean the adoption of the *sentience* of terrain.\(^{198}\) The term ‘country’ is relevant here. After working with Aboriginal peoples, Rose describes Country as a proper noun, as ‘a place that gives and receives life. Not just imagined or represented, it is lived in and lived with...country is a living entity with a yesterday, today and tomorrow, with a consciousness, and a will toward life.’\(^{199}\) Jessica Weir explains that ‘[C]ritically, in country, humans and nature, and nature and culture, are not regarded as separate, but are entangled together in all types of relationships.’\(^{200}\) Country is a multi-dimensional entity and an active participant in interconnected relationships defined by reciprocity and responsibility. As Indigenous studies scholar Ourania Emmanouil articulates, ‘[O]ngoing work is required by people to stay in nurturing relationships with country.’\(^{201}\)

Indigenous ontologies built on relationality and responsibility can inspire an Australian land ethic as much as the particularities of Indigenous peoples’ land management practices.\(^{202}\) The recognition of relational cosmologies and associated ethical obligations can form inspiration for contemporary restoration work.

**Ecological imperialism and industrial agriculture**

The invasion of Australia during the industrial revolution is significant to ecological decline. European farming practices and a push for production caused the demise of fragile ecosystems and old soils. During the course of colonisation, European cultivation and industrialised agriculture, Australian ecosystems have changed irrevocably, and numerous species have been lost.

In Australia, settler agriculture was a violent colonising practice that occurred in line with the explosion of industrial market pressures. Connections between industrialisation, capital,
poverty and labour are both local and global. Historian Lisa Ford outlines the significance of the timing of British settlement in Australia coinciding with ‘new technologies of empire’ with the colonies providing both resources and sites for convict labour. ‘After 1815’, writes Ford, ‘both industrialization and post-Napoleonic mass migration fed astounding demographic and economic growth in Anglophone settler peripheries. The American southwest and every New South Wales frontier were suddenly and extensively populated by people, sheep, and cotton fields.’

Directions from the Crown to alter and extract were strong. Historian Cameron Muir explains that the European judgement of working—therefore—owning the land was underpinned by a mix of the liberal philosopher of John Locke’s definition of property in Two Treatises of Government (1689) and Emerich de Vattel’s The Law of Nations (1758). Settlers lived with the belief that they ‘would never legitimately possess the land until it had been tilled.’ The interpretation of Crown orders was specific so as to avoid recognition of Aboriginal peoples’ practices. As environmental lawyer Richard White describes:

[I]n countries such as Australia, Indigenous territories were considered frontier lands that were un-owned, under-utilised, and therefore open to exploitation. The prior ownership rights, interests and knowledge of Indigenous inhabitants were treated as irrelevant by the European invaders.

Colonisation is, to Frieda Knobloch, an agricultural idea and act, while Raymond Williams asserts ‘those eighteenth-century agrarians who got themselves called an aristocracy…laid the real foundations, in spirit and practice…for the industrial capitalists who were to follow them.’ Indeed, the expansion of settlement into south-eastern Australian grasslands between 1830 and 1845 was paved by sheep. Sheep were described as ‘foot soldiers of empire’, working for ecological imperialism. Historian Jodi Frawley describes how in Australia:

203 William Ruddiman suggests that the Anthropocene began with the onset of pasture driven agriculture: Ruddiman, “The Anthropogenic Greenhouse Era Began Thousands of Years Ago.”
204 Ford, Settler Sovereignty: Jurisdiction and Indigenous People in America and Australia, 28.
205 Ford, 28. Ford’s analysis explains that both North America and Australia modelled themselves as states with territorial sovereignty, resulting in both suppression of Indigenous peoples and a lack of treaties.
206 Muir, The Broken Promise of Agricultural Progress: An Environmental History, 92.
‘sheep script’ rewrote the land, obliterating a previous language of human-environment relations and establishing itself as the dominant narrative. A country of soft-footed browsing marsupials was unprepared for the pressures of hard hooves and deep rooted grazing. Hard-hooved animals, rabbit plagues and vegetation clearing marred the inland of Australia following European invasion. The Australian nation holds a litany of stories of ecological damage and subsequent catastrophe: mass over-clearing and topsoil loss; trampling of waterways and contamination; diversion and damming of rivers; fertiliser addition, irrigation and salinity woes. Further advancements in agriculture and mining in the early days of the colonies brought fast and vast irreparable damage. Rose explains that ‘[I]t’s well known that settlers cleared the land of both native people and native ecologies in order to establish what they took to be civilisation.’

Great movements of plants and animal accompanied the imperial project around the globe. Historian Keith Hancock explains that the exploration that led the English to the Australian continent was part of a burgeoning fascination of nineteenth century natural history. Indeed, key figures in settler-colonial history like Joseph Banks, Ferdinand von Mueller and Arthur Phillip were active in acclimatisation projects that introduced many of Australia’s ‘pest’ animals, that wreak significant damage to ecosystems. In February of 1861, Edward Wilson (London-born journalist and philanthropist not American biologist E. O. Wilson) founded the first acclimatisation society in Victoria. Within years, sister societies in New South Wales, Queensland and South Australia were hard at work, with devastating ecological impacts.

It did not take long until the country resisted. The results of ‘ecological imperialism’, Muir writes, were ‘brutality, massacres, corruption, animal cruelty and environmental waste on a scale that threatened to derail the entire settler project.’ The ‘[M]isjudgement of climate or 

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211 Hancock, Discovering Monaro: A Study of Man’s Impact on His Environment, 64.
212 Muir, The Broken Promise of Agricultural Progress: An Environmental History, 92.
213 Rose, Reports from a Wild Country: Ethics for Decolonisation, 35.
214 Hancock, Discovering Monaro: A Study of Man’s Impact on His Environment, 115. Unfortunately the extent of damage wrought by introduced species are beyond the scope of this thesis.
215 Muir, The Broken Promise of Agricultural Progress: An Environmental History, 2. As discussed in B1:Dust it was in direct reaction to such a threat of derailment that the origins of Australian ecological restoration emerged.
pasture’, writes economic historian Alan Barnard, ‘was probably to be expected’, and became ‘part of the price of pioneering.’ Furthermore, in the absence of Aboriginal burning practices ‘[T]he scrub was increasing in density, it was closing over, and it was rejecting the European settlers.’

This thesis proposes that enduring impacts of colonisation and industrial agriculture can never be unwritten, but through attentive practices and reflection, the ongoing damage wrought by inappropriate social imaginaries can be brought to light. Ecological restoration cannot overlook ‘working’ landscapes.

Spatial divisions

Spatial divisions and boundary setting characterise settler relationships with Australian ecologies. Straight lines are a weapon of frontier societies. At the time of European settlement, and since, the Australian continent has been divided across the territories of its First Nations peoples. A complex Indigenous system of land tenure was denied, as new boundaries were written over the country. In the colonies, fences were erected to define conceptual ideas of place and territory, while mapping went hand in hand with biological documentation and plans for resource production. Such spatial boundaries are highly relevant to histories of land degradation, and to the ideological and moral othering that enables extractive relationships with land and country.

Fences are a tool of the frontier; central to ideas of territory, to management of Australian ecosystems and to ecological restoration projects. Since European colonisation of Australia, timber, steel and wire fences have been erected across the continent. Fencing scripted the land, imposing new divisions of social and environmental spaces, reshaping territory and defining boundaries. William Cronon describes the capacity of fences to map settlement’s property rights, economic activities and ecological relationships, and even litigation trends. Hayward and Kerley point out a ‘geographical bias in the use of fences for conservation’ and point out that ‘Australia, New Zealand and southern Africa have embraced the use of fencing to separate

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219 See Horton, “Aboriginal Australia Wall Map.”
biodiversity from its threats.’

This geographical bias can be read as reflecting the legacies of colonial thinking.

Fencing was employed in the definition and protection of ‘productive’ and ‘settled’ land. In Discovering Monaro, historian W K Hancock states: ‘to fence the land was to improve it.’ Indeed, ‘improving’ was a legal obligation in taking up the land. Fences ‘proved to be a most useful technology of exclusion and transformation’ that become a ‘powerful symbol of ownership, rights, and status’, says geographer Lesley Instone. She writes that fencing denotes land as ‘used’, and ‘clearly distinguishes it from wastelands, wilderness and unproductive country.’ As such they act as a potent tool in colonisation.

By the late 19th century, technological developments and the availability of wire made fencing more affordable. Fencing enabled the opening of vast areas of land for unsupervised stock, but it came with costs to farm management and local ecosystems, by ‘binding the countryside into defined and defensible segments.’ As Hancock puts it, ‘the owners of cattle and sheep could not survive except by converting leasehold into freehold; they could not hold their freehold secure except by fencing its boundaries.’ Economic historian Alan Barnard argues that fencing ‘carried with it the imperative that investment programs be finalised quickly and that the productive opportunities it offered be utilised fully.’ These mentalities pushed the land to its limits and hastened ecological decline.

Fencing also became enrolled in large agricultural projects to protect agricultural land from ‘pest’ animals. In 1800, the beginnings of the ‘Dingo Fence’ or the ‘Dog Fence’ were put in place to keep wild dogs from threatening the fertile agricultural zones in the south-east of the continent. Today, after various iterations, the 5,614-kilometre fence runs from South Australian through New South Wales to Queensland.

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221 Hayward and Kerley, “Fencing for Conservation: Restriction of Evolutionary Potential or a Riposte to Threatening Processes?,” 5.
222 Hancock, Discovering Monaro: A Study of Man’s Impact on His Environment, 122.
223 Instone, “Fencing in/Fencing and: Fences, Sheep and Other Technologies of Landscape Production in Australia,” 375, 372. In this way, the myth of terra nullius that underpinned European invasion of Australia is countered by the acts of fencing.
224 Instone, 375.
225 Hancock, Discovering Monaro: A Study of Man’s Impact on His Environment, 122.
227 Hayward and Kerley, “Fencing for Conservation: Restriction of Evolutionary Potential or a Riposte to Threatening Processes?,” 5. The first transcontinental fence was the Rabbit Proof Fence, erected to protect Western Australian crop and pasture lands from rabbits. It was started in 1901 (fence Number 1) stretching 1834 kilometres, and extended another 1166
fence is now patrolled by car, but every fence has some porosity. These fences curated the land into definable segments in the national consciousness but demand continual reassertion. The imagined and physical divisions of space are in constant conversation with the material realities of Australian ecologies, cultures and practices.

Increasingly, the ethics of fencing are being questioned. There exists a degree of political territorialisation embedded in the story of transcontinental fences, as conveyed by recent reflections. Australian ecologist Tom Newsome, states: ‘[T]he dingo fence is probably the most extreme length undertaken by any country in the world to exclude a predator from inhabiting or recolonizing areas where they once used to roam free’²²⁸, while further abroad, journalist Serena Solomon conveys the length of Australia’s Dingo Fence by comparing it to the controversial wall proposed for the North American-Mexican border.²²⁹

Spatial boundaries in the national imaginary are also defined through maps. Lines fragment the south-western and north-eastern regions, resulting in a separation between the north-west/central regions to one side, and east/south-east to the other. The Rowley Line, drawn by geographer Charles Dunford Rowley (1906–1985) provides one such example. Rowley drew a line across a map of Australia to delineate Aboriginal Peoples into two groups: ‘Colonial/Remote’ to the northwest; ‘Settled’ to the south-east (fig 1).²³⁰ The Rowley Line still shapes national ideas around Aboriginality and culture that affect federal policy initiatives and environmental and resource management. The Rowley line also delineates a temporal division, where for Rowley, crossing the boundary from ‘Settled’ to ‘Colonial/Remote’ is like passing ‘into an earlier pattern of race relations.’²³¹ This line and its legacies of defining “authentic aboriginality” are becoming a locus of resistance.²³²
In 1920, geographer Griffith Taylor (1880–1963) compiled a series of maps depicting the continent by resources and production potential. Of particular interest is the map “Sheep &

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233 Powell, “Taylor, Thomas Griffith (1880–1963).”
"Wheat", showing disproportionate impact of settler agriculture, ideology, and activity in the south-east of the continent (fig 2).

Figure 2: Griffith Taylor Map of sheep and wheat regions in Australia. Reproduced from Taylor & Beckit (eds.) 1920.

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234 Taylor and Beckit, *The New Oxford Wall Maps of Australia: Sheep & Wheat*. South-eastern Australia retains somewhat of its settled, altered imaginary, but these divisions are beginning to fray. This is in part discussed in *B1: Dust ‘Returning to Barka’*, which addresses the limits of water in the region and the implications of industrial agriculture to ecological and cultural health.
Local lines were also of significance. For example, in 1865, Surveyor-General George Goyder assessed ecological variation in South Australia and defined the boundary between land that was suitable for cropping (areas of higher rainfall to the south) and land suitable only to grazing (areas of lower rainfall to the north) through Goyder’s Line of ‘reliable rainfall’. Tasmanian is also divided east to west through Tyler’s Line (after limnologist Peter Tyler), which articulates significant differences in underlying geology, vegetation and climate. American fire ecologist Stephen Pyne describes another line of sorts, the ‘fire flume’ in the far south-east of the continent. Here, tall Eucalyptus forests (particularly *Eucalyptus regnans*, the tallest flowering plant in the world) meet high-pressure systems and hot winds resulting in periodic fire-storms.

This thesis presupposes that the ways that spatial structures participate in and are reimagined through restoration work is significant in the evolution of ecological and cultural practice.

### Trends in Australian conservation

Conservation emerged and operates in Australia in specific historical contexts. In New South Wales in 1879, Royal National Park, Australia’s first national park, and the first legislated national park in the world, was established. The ‘National Reserve System’ (NRS) however, is born of a North-American national park mentality with origins in the 1960s. The premise of wilderness, and the myth of *terra nullius* reinforced that nature was ‘out there’, void of people. The first National Parks act in Australia was passed in 1956 and follows a preservationist ethic. In Australia, the ideological, legal and epistemological frameworks for national parks made biological scientists the leaders for much of the twentieth century and put value on places without human presence. This is now changing.

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236 Rees and Cwynar, “A Test of Tyler’s Line – Response of Chironomids to a PH Gradient in Tasmania and Their Potential as a Proxy to Infer Past Changes in PH.”
238 This timing is not recognised within dominant literature on national parks focussed on North America: Robin, “Being First: Why the Americans Needed It, and Why Royal National Park Didn’t Stand in Their Way.”
In 1992, Australia signed the Convention on Biological Diversity at the Rio Earth Summit, and committed to developing a system of protected areas through the National Strategy for the Conservation of Australia’s Biodiversity. Collaborative work between the Federal, State, and Territory governments resulted in a network of protected areas that, by 1996, covered almost 60 million hectares. Responding to the fact that some of the most diverse and valued ecosystems occurred on recently asserted Indigenous land, ‘Indigenous Protected Areas’ were developed. After 1999, the significance of private land to the conservation estate was recognised, and a series of State and Territory-based conservation networks, NGOs and government grants targeted this area, which is still growing today. The NRS has been considered a great success, and in 2008 was subsumed as a component under the new ‘Caring for our Country’ initiative, backed by significant government funding. The inclusion of both recognised Indigenous land and private (non-Indigenous owner) land has only come into the picture in more recent history, as the matrix between crown reserves became valued for biodiversity conservation. With this shift, conservation management has to work with various conceptions of ‘nature’ in production landscapes, underpinned by very different values and assumptions.

Agricultural land accounts for approximately 60 per cent of the Australian continent. To carry out environmental protection, private land is increasingly brought into the conservation space, as is the trend in much of Europe and the United States. This is largely approached under the umbrella of ‘natural resource management’ (NRM), which aims to secure ‘healthy and productive landscapes which supply multiple environmental and social services.’ Since 1990’, writes ecologist Stefan Hajkowicz, ‘the Australian federal government has announced seven major natural resource programs, including extensions of existing programs, collectively worth A$ 6.51 billion.’ A thorough history of Australian national parks and NRM is beyond

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240 See High Court, Wik Peoples v The State of Queensland.
241 Australian Government Department of the Environment and Energy, “History of National Reserve System.” It is important to note that funding and governance structures which assume that Indigenous and ecological wellbeing work hand in hand remain problematic.
242 Robin, Dickman, and Martin, Desert Channels Impuls. to Conserv., 80.
243 As discussed in R2:Soil.
246 Hajkowicz, 472.
247 Hajkowicz, 472.
the scope of this thesis. However, the important message for this project is that dominant structures of land rehabilitation and restoration in Australia emerged from within a productivist, land ‘management’ and ‘use’ paradigm, yet grew at a time of increasing global environmental consciousness and a local campaign for a conservation ethic based on ‘wilderness’.

Natural resource management emerged out of decades of witnessing, researching, and responding to land degradation, soil loss, erosion, salinity and vegetation decline predominantly in the period between the 1940s–1980s. In regional Victoria in the late 1970s, a series of ‘Farm Tree Groups’ came into being. Environmental policy contributor and environmental studies academic Andrew Campbell explains an ‘increased enthusiasm for planting trees as a symbol of environmental repair–a reverse in the trend of degradation and degeneration of rural landscapes.’ The Farm Tree Groups demonstrated the willingness of individuals to contribute to conservation objectives, and spurred a government initiative to formalise a community-based and largely community-driven land-protection program that responded to a large range of issues. Campbell writes that the main focus of the first Landcare group (in Winjallok, Victoria 1986), ‘was to blend soil conservation and productive farming by establishing deep-rooted perennial pastures on the bare hills of the district.’

The budding of Landcare groups, in Victoria and subsequently in Western Australia directly responded to dry land salinity (and wind-erosion in the west) of the 1980s that required immediate and united reaction. Also responding to soil concerns, the National Soil Conservation Program operated as a ‘research, advisory, and extension program’ from 1983 to 1989.

In 1988, an ‘unholy alliance’ between the Australian Conservation Foundation and the National Farmers Federation pushed for federal investment in a national program to address land degradation. In 1989, the National Landcare Program was launched. Today, the ‘Landcare’ program (with branches of Coastcare and Dunecare and Bushcare) is made up of community volunteer groups working with government, local business and private landholders in Australia

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248 The contradictory narratives underpinning restoration are revisited throughout this work.
249 Barr and Cary, *Greening a Brown Land: The Australian Search for Sustainable Land Use*.
251 Campbell, 29.
and overseas; with programs for schools, corporate volunteering, and youth ‘Green Army’ (launched 2014) programs.253

The 1980s were also a time when environmental sensibility was leading to activities to protect and bring back the ‘bush’ in people’s local urban communities. In New South Wales in the 1980s, Joan and Eileen Bradley established a standout method of bush regeneration known as ‘The Bradley Method’ that brought a particular ethic to regeneration projects, by working from least-effected areas first and nurturing natives.254 1986 saw the establishment of the member-based Australian Association of Bush Regenerators (AABR) in New South Wales. AABR persists today as a prominent advocacy, education and accreditation body for ecological restoration and land management in Australia.255

From the 1990s, Australian biodiversity management became increasingly privatised. Non-government organisation, and philanthropist funds (both through land ownership and through grants for private land management) have filled gaps of government lack.256 Leading non-government organisations have taken it upon themselves to purchase land for conservation objectives and seek diversity in funding models outside of government.257 A series of incentive schemes and public-private partnerships have worked towards land being managed both for production and biodiversity benefits. Through complex layered partnerships and tenure agreements, ‘[L]and management has become a multi-faceted enterprise, with professionals and locals contributing variously to the outcomes.’258 In this context, social aspects, values, rights and politics come to the surface and need careful negotiation.

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255 Australian Association of Bush Regenerators, “What Is AABR.”

256 Fitzhardinge, “Production Lands, Philanthropy and Biodiversity.” Examples of large private NGOs include the, Bush Heritage and the Tasmania Wildlife Conservancy. Today there is an increasing trend for the purchase and conservation-based management of private land by ‘impact-investment groups’ and a general neoliberalisation of nature conservation. For example, see: Castree, “Neoliberalising Nature: The Logics of Deregulation and Reregulation”; Igoe and Brockington, “Neoliberal Conservation: A Brief Introduction”; Higgins et al., “Payments for Ecosystem Services, Neoliberalisation, and the Hybrid Governance of Land Management in Australia.” This is considered more in B2: Soil: Reflection.


258 Robin, Dickman, and Martin, Desert Channels Impuls. to Conserv., 71.
Management responsibilities carry political assertions of authority. Historian Katie Holmes attends to the ‘cultural work’ of environmental management in her critical interpretation of the Australian Landcare movement. She brings to attention the embedded settler-colonial mentality and politics within. ‘To adopt a position of caring for the land’, writes Holmes, ‘not only evokes the language of maternal nurture but, in a more troubling way, positions the settlers rather than Aboriginal people as the rightful carers.’259 Holmes asserts that through Landcare ‘the nation redeems and transforms itself; it morphs from a colonial exploiter and degrader of the land, to a nurturing, custodial position.’260 Importantly, this was being done in the 1980s, the same decade as the Aboriginal Land Rights movement. It is not a coincidence, argues Holmes, that ‘Landcare emerged at the same time as Aboriginal people, and some white Australians, were asking unsettling questions about land ownership.’261 When, in 1996, the ‘Wik’ decision of the High Court of Australia formally allowed Native Title to co-exist with pastoral leases, ‘the fence lines that leaseholders believed defined their exclusive possession were suddenly no longer secure.’262

After the 1996 Wik decision and national apology, a ‘potent component of history in the present’, became enrolled into Landcare discourse by making Aboriginal people stakeholders and in doing so, ‘their unique status as traditional owners’ Holmes argues, ‘was deftly, recognized and simultaneously negated.’263 Indeed, as Jessica Weir asserts, the legacy of the philosophies, practices and western land tenure underpinning land conservation not only excluded Indigenous people from their country but ‘continues to have ramifications in native title, limiting the kind of native title rights that can be recognised.’264

Since the 1960s, the livelihoods of Indigenous peoples and environmental conservation goals have often been addressed collectively. The clash between goals of environmental movements and the desires and rights of Indigenous peoples have been discussed since the 1990s.265 These

259 Holmes, “Redeeming Landscapes: Ireland and Australia,” 234.
260 Holmes, 238.
261 Holmes, 233.
264 Weir, Country, Native Title and Ecology, 4.
265 For example see: Cronon, “The Trouble with Wilderness: Or, Getting Back to the Wrong Nature”; Langton, Burning Questions: Emerging Environmental Issues for Indigenous Peoples in Northern Australia; Dove, “Indigenous People and Environmental Politics.”
concerns remain, amidst the reality that environmental degradation and human health impacts are today important manifestations of universalising concerns about basic human rights: access to good health, clean water, and safe food production.266

This brings us back to the National Reserve System being subsumed under the federal Caring for our Country program (in 2008). The use of the term ‘Country’ and indeed, ‘our Country’, has come under scrutiny from both Indigenous and non-Indigenous scholars. They argue that it is ridden with power struggles, settler-colonial ontologies, and that NRM discourses are out of touch with the complex ethical relationships that the word represents.267 However, as geographer Sandy Suchet-Pearson and others explain, ‘Caring for Country is a means through which Indigenous peoples in Australia have asserted their rights to Country, to “resources” and to “environments”, and to the decision-making processes which have enabled the appropriation of these concepts to particular Western rational values and uses.’268

Since the formal recognition of Australian Indigenous land rights and Native Title legislation in the 1960s, Indigenous land and Sea Management forms a significant part of Australia’s conservation portfolio. In 1997, the first Indigenous Protected Area (IPA) was established in Nantawarrina in South Australia. In 2019, IPAs comprise 44 per cent of the National Reserve Systems covering 66 million hectares of land.269 In 2019, a further investment of $12 million to establish new IPAs was announced.270 The contribution of the Indigenous estate to the ecological future of the nation is now widely recognized by ecologists and policy makers

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266 This is particularly relevant as Indigenous communities and other marginalised groups bear the brunt of climate change, which, in Australia, is heightened by intergenerational social and economic disadvantage within remote and often extreme environments. See Gordon, “Climate Change and the Poorest Nations: Further Reflections on Global Inequality.”, Green, King, and Morrison, “Climate Change on the Health of Indigenous Australians.” Law scholar Rebecca Tsosie argues for Indigenous environmental self-determination to force climate change policy of nation-states to act so as to maintain their cultural and political status on their sovereign lands. See Tsosie, “Indigenous People and Environmental Justice: The Impact of Climate Change.” Indigenous communities also suffer the majority of the social and environmental costs of resource extraction industries. See White, “Resource Extraction Leaves Something Behind: Environmental Justice and Mining.”


270 Commonwealth of Australia, “Grant Opportunities for New IPA Program Now Open.”
These areas are largely managed by Indigenous Rangers as part of the Indigenous Land and Sea Managers’ program. The objective of these programs is to enhance the socio-economic status of Indigenous people while strengthening Indigenous culture and supporting the management of Indigenous owned or managed land and sea. Current Indigenous community development strategies include community-based conservation initiatives. A review of the socio-economic, cultural and environmental benefits conveys positive results, however a push to improve outcomes for Indigenous justice, values and knowledges is gaining traction in Australia and around the world.

These programs have a way to go when it comes to their spread, their support, and their critical review so as to unsettle Western ontologies and knowledge. Indigenous involvement is needed in framing activities, languages and practices through a thorough recalibration of expectation and assessment. The notion of ‘two-way’ or ‘cross-cultural’ approaches are used to promote Indigenous methodologies and knowledge and employ them in environmental management practices. As Verran writes,

[T]he proclamation of an IPA implies that management of such an area will meet standards of management practice laid down by World Conservation Union (IUCN) guidelines. These are practices defined in scientific terms, and they pivot on a scientific concept of place...certain

272 Commonwealth of Australia, “Growing up Strong: The First 10 Years of Indigenous Protected Areas in Australia.”
273 For example, see Indigenous Advancement Strategy 2015
275 Importantly, Indigenous-led knowledge sovereignty with a cultural analysis grounded from the Indigenous Australian experience, and with underpinning goals of social, political, economic and cultural enhancement for Indigenous Australians, needs to be respected. See: Colchester, “Beyond ‘Participation’: Indigenous Peoples, Biological Diversity Conservation and Protected Area Management”; Coombes, Johnson, and Howitt, “Indigenous Geographies III: Methodological Innovation and the Unsettling of Participatory Research.”
structural characteristics of their working contains dangerous possibilities for disempowerment.  

The map of Indigenous Protected Areas with the National Reserve System in Australia clearly highlights the discrepancy between the north to south and east to west, written through colonial histories, resources, relationships and population change through time (fig 3). Working on Aboriginal economic policy, researcher Janet Hunt explores the relevance of Indigenous ranger groups in northern Australia to south-eastern Australian. Hunt also points out that that the majority of Indigenous people live not in the north but in towns and regional areas of Australia and that the first IPAs emerged in south-eastern Australia (in South Australia, and Tasmania and in New South Wales by 2001). That is, Aboriginality exists, in spite of the settler-colonial project, in Rowley’s ‘settled’ region (fig 1). Nevertheless, the particularities of power structures, settler land-use histories and Western legislative particularities carefully limit Aboriginal land rights and tenure, visible in the majority of IPAs occurring in the north and west of the continent (fig 3).

Also of significance is that in 1983, a blockade by traditional owners of New South Wales conservation reserves precipitated legislation that enabled the hand-back or joint management of reserves. In the population-dense south-east, amidst violent histories, land dispossession and cultural destruction, Indigenous communities continue to fight for recognition of their ongoing presence, culture, and land rights. This is in part, carried out through working on country in a series of conservation partnerships, contracts and opportunities that aim to foster access to land, cultural practices, knowledge exchange and ecological outcomes.

Today’s ecological maps are more complex and created through the aggregation of data on geology and soil, biology and climate, as evident in the map of the Interim Biogeographic Regionalisation for Australia (fig 4). Maps like this one do not speak to human histories, but

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278 Hunt, “North to South?,” 94.
279 Hunt, “North to South?” This includes Mutawintji National Park being handed back to Barkindji people and leased by the state, as explored in ‘Dust’
281 The 2012 Interim Biogeographic Regionalisation for Australia map (Version 7), illustrates 89 geographically distinct bioregions of the Australian continent as deduced from data on climate, geomorphology, landform, lithology, and characteristic flora and fauna. Australian Government Department of the Environment and Energy, “Interim Biogeographic Regionalisation for Australia, Version 7.”
human histories are everywhere in tales of ‘environmental’ management. The legacies of ideas about where ‘nature’, ‘agriculture’ and ‘Aboriginal people’ are considered to belong speak through maps of the NRS and IPAs. In Australia, native title, Indigenous protected areas and Indigenous Land and Sea Managers’ programs predominantly occur in the North and West of Australia. Less than one per cent of NSW falls under native title, despite the state having the largest Indigenous (Aboriginal and Torres Strait Islander) population (216, 171 people at 2016 Census).\(^{282}\) The south-east of Australia also has disproportionally less land in the NRS, and significantly more bioregions underrepresented in the NRS (fig 3–6).

In the Australian context, natural resource and biodiversity management, Australian Native Title and Aboriginal Land Rights are all in relationship with the politics of environmentalists, pastoralists, tourist operators, developers, mining corporations, and Aboriginal communities.\(^{283}\) Geographer Michael Adams explores the intersection of environmental and Indigenous rights policy histories, stating: ‘[t]he statistics on indigenous land claims, and conservation reserves, in Australia and more specifically the state of New South Wales (NSW), reveal a landscape of policy failure in both arenas.’\(^{284}\)

This section has introduced the contexts within which ecological restoration in Australia operates. It is evident that the Australian context, there are ample, ongoing reasons to feel shame and to attempt to bury the past.\(^{285}\) Indeed, history in Australia has been shrouded by what


\(^{283}\) Verran, “‘A Postcolonial Moment in Science Studies: Alternative Firing Regimes of Environmental Scientists and Aboriginal Landowners.’”


\(^{285}\) The relationships between shame and ecological restoration has been explored in detail by William Jordan (Jordan, *The Sunflower Forest: Ecological Restoration and the New Communion with Nature*). Still this work is not fully embraced in the field. Jordan argues that the widespread failure of the environmental movement stems from an inability to face shame associated with deep human failing, and he posits ecological restoration as an opportunity to face this shame. Jordan’s writing on shame is framed within a Judeo-Christian origin story; a failure of humanity relating to the collective human condition in the abstract and the environmental movement as responding to an original sin. For a further account of ecological restoration as religious practice and how this connects to moral action see Van Wieren, “Restored to Earth: Christianity, Environmental Ethics, and Ecological Restoration.” These stories do not adequately describe the Australian cultural experience of shame at the violence to Indigenous people in the name of colonisation. Until recently, Australia’s frontier wars were not mentioned in public
anthropologist William (WEH) Stanner calls the ‘Great Australian Silence,’\(^{286}\) formed through rejecting, obscuring and misunderstanding. As Griffiths explains, ‘[S]ilences are not just absences, although they can be manifest in that way. Silences are often discernible and palpable; they shape conversation and writing; they are enacted and constructed.’\(^{287}\) Australia desperately needs to talk about its history, as it played out in specific places. Any opportunity is powerful. As it is in historical narratives, so in the way that we attend to the land. Ecological restoration projects participate in promoting certain histories and giving voice to certain perspectives; thus, they are unavoidably political.

In Australia, ecological restoration can play an important role in responding the material legacies of extermination, extraction and extinction wrought by past and present settler-colonial and industrial practices. Yet restoration practitioners must also appreciate the fact that they operate within ancient cultural ecologies that continue to be divided and manipulated through damaging social imaginaries. The Society for Ecological Restoration Australasia (SERA) is becoming an increasingly organised and professional body in the conservation and environmental management sector in Australia. SERA’s role in developing ecological restoration standards and promoting the practice both locally and internationally (through the international SER) is strong. Australian restoration practitioners are in a powerful position to sensitively evolve the practice within the complex cultural ecosystems and storied places they work.

It is important that ecological restoration does not enrol ‘history’ as merely a symbolic gesture. The ethics of the practice will be determined in part by how it uses history to understand and confront cultures complicit in social and ecological decline. The next section of this thesis outlines methods through which this can be achieved.

\(^{286}\) Stanner, “After the Dreaming.”  \(^{287}\) Griffiths, The Art of Time Travel: Historians and Their Craft, 144.
Figure 3: Map of Australia’s National Reserve System showing reserve governance (CAPAD 2016)
Figure 4: Map of IBRA regions (version 7) illustrating the diversity of bioregions in Australia (Australian Government, 2016)
Figure 5: Map of IBRA bioregions underrepresented in Australia’s National Reserve System (CAPAD 2016)
Figure 6: Map of NSW bioregions with percentage protection level in DECCW (NSW state environment department reserves) (NSW Government, State of Environment 2019).
Research Framing

The conversation between science and practice has long been argued as necessary for ecological restoration outcomes. Introducing history to the mix adds yet another language to be translated. The tools that are necessary to reflect on and expand ecological restoration span multiple disciplines. This section outlines the process through which methods were understood and employed in the present research practice. It contributes to ecological restoration discourse an argument about the strengths of interdisciplinary environmental studies. These strengths are often overlooked when history is used in ecological restoration merely as a series of path dependencies employed to inform particular reference points in time.

Place studies

In action, sciences are mediated by local contexts. Cultures of restoration are quintessentially local and each draw on place-based histories, ecologies and cultures. This thesis turns to individual practices, to garner a richer understanding of ecological restoration cultures. Cultures emerge through encounter with material realities amidst practical ‘sciences in action’, as Robin argues.288 It is not the intention of this thesis to provide an overview or summary of restoration in Australia. Instead, this research takes time to understand and sit with those confronting the very local realities, and uncertainties, in ecological restoration philosophy and practice.

In Australia, environmental management is administered largely by states. In Part B: Place Studies, this thesis examines restoration work in three places in regional NSW, Australia: Broken Hill, the Monaro and Bermagui. These places were selected to exemplify differences in local ecological restoration cultures. The history of contested settlement is long in NSW. It was the site of Australia’s first National Park (1879), and one of the first places for hand-back of National Parks to Indigenous ownership and management. Today it has the second lowest representation of land in the National Reserve System (NRS) (at 9.3 per cent of the state, just above Queensland with 8.44 per cent and compared to a national average of 19.63 per cent).289

288 Robin, How a Continent Created a Nation, 10.
289 Commonwealth of Australia, “Collaborative Australian Protected Areas Database (CAPAD) 2016.”
New South Wales remains a place of highly contentious environmental management histories, poor Indigenous socio-economic status and land rights recognition, and current leadership that promulgates denial of environmental realities. These factors make studying the human aspects of ecological restoration in NSW particularly salient.

We travel below the Rowley Line and east of the Dingo Fence; a region connected by rich Indigenous histories, violent colonial impacts, and legacies of pastoralism, agriculture, mining and urban development, all amidst highly variable disturbance ecologies. Conservation biologists focus on those habitats considered more ‘intact’, away from the populated, agricultural and urban landscapes. Instead, this work seeks to understand cultures of restoration within highly modified and contested places with layered human histories. Restoration work is built on the past, present and future role of people and the environment as they shape, and are shaped by, one another. As such, it resists ‘wilderness’ myths and limited ecological restoration definitions and considers restorative land projects as they form part of daily lives.

For this project it was critical not to restrict methodology that would limit the breadth of the research and practice. Multiple methods that have emerged from a range of disciplines are employed. Together, they enable a research practice suited to the needs and experiences of each place. I follow the techniques advocated by interdisciplinary environmental scholar Ian Scoones, to allow ‘fruitful engagement’ of the social sciences with ‘new ecologies’: particularly environmental history, imbued with a variety of ‘hybrid’, interdisciplinary methods. These hybrid methods are adept at exploring contemporary social and ecological processes in an historical context: environmental history, political ecology and decolonising methodologies. Each is introduced below with an outlining of its relevance to understanding cultural aspects ecological restoration.

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290 For example, in February 2019 NSW Premier Gladys Berejiklian of the NSW Liberal party with the NSW Nationals party boosted drought support funding from AU$650 million to AU$1.5 billion, promising to help farmers ‘drought-proof’ their properties. But the water has to be taken from somewhere. NSW Government, “NSW Liberals & Nationals Boost Drought Support to $1.5 Billion.”


Environmental history

This thesis seeks to demonstrate the broader contribution of environmental history to ecological restoration: as a critical lens through which human-environment relationships can be understood and reckoned with. Here it gives background to this argument and presents five characteristics of environmental history (some particular to Australian environmental history) that make it relevant to the contemporary needs of ecological restoration practices.²⁹³

Jackson argues that without ‘history in environmentalism’, ‘our thinking will not be bold enough.’²⁹⁴ Ecological restoration predominantly draws on history as an apolitical transition between ecological states. As historian Steve Mullins explains, ‘[T]here is now general recognition among environmental scientists that historical perspectives are useful, and in some circumstances essential, and this especially is true in specialisations where “shifting baseline syndrome” is regarded as a significant problem.’²⁹⁵ ‘Shifting baseline syndrome’, a term coined in 1995 by fisheries ecologist Daniel Pauly, describes the tendency for scientists to assume a new ‘baseline’ of ecological state that aligns with the beginning of their own experience.²⁹⁶ It has been explained as a product of both ‘generational amnesia’ and ‘personal amnesia’²⁹⁷ and has supported the need for fixed historical baselines in restoration ecology.²⁹⁸ However, as Mullins states, ‘the scientific imperative to establish authentic baselines’ through historical ‘data’ ‘often blinkers scientists to history’s other uses.’²⁹⁹ A richer employment of history can help ecological restoration to be more bold.

American historian of science Gregg Mitman writes that the 1980s and 1990s yielded ‘a growing body of scholarship on the history of ecology as a scientific discipline [that] never became central to the growing field of environmental history.’³⁰⁰ He says that ‘[W]ithout a material link between the history of ecological thought and environmental change, there has been little to connect the history of science with environmental history.’³⁰¹

²⁹³ For a comprehensive articulation of the unique strengths of Australian environmental history see: Griffiths, “Environmental History, Australian Style.”
²⁹⁴ Jackson, Consulting the Genius of the Place: An Ecological Approach to a New Agriculture, 63.
²⁹⁵ Brown et al., “Can Environmental History Save the World?,” 5.6.
²⁹⁶ Pauly, “Anecdotes and the Shifting Baseline Syndrome of Fisheries.”
²⁹⁷ Papworth et al., “Evidence for Shifting Baseline Syndrome in Conservation.”
²⁹⁸ Vera, “The Shifting Baseline Syndrome in Restoration Ecology.”
²⁹⁹ Brown et al., “Can Environmental History Save the World?,” 3.1.
³⁰¹ Mitman, 500.
histories in conversation with ecological restoration provide this link. They contribute the following strengths to restoration cultures.

**Bringing an historical context to environmental management**

The ‘1788 imaginary’ freezes historical time and alienates a deeper understanding of time and change in scientific consideration of history. A wider understanding of historical context can counter this tendency. Furthermore, ecologist David Bowman advises that to sufficiently understand and respond to global climate change, land managers and ecologists need to ‘think beyond their local environment and put their problems into a historical context.’ Understanding both local environment and historical context is a strength of environmental history. Scoones explains that a wide body of work in environmental history has resulted from the ‘recognition of the importance of temporal dynamics on current [ecological] patterns and processes.’ Environmental histories rich in the critical capacities of humanities scholarship can enrich ecological restoration by foregrounding change over time to both environments and cultures.

**Being strong in political tendencies**

Speaking directly to Leopold’s argument for the political work of ecological restoration, environmental history too was ‘born of a strong moral concern’ presuming that ‘nature was vulnerable to human actions’ and that ‘in time, human beings would pay the price for their own arrogance and thoughtlessness.’ Historian Sarah Brown pinpoints how relevant environmental history can be to ecological restoration, stating:

\[M\]any of the early writers held in common a belief that Europeans in Australia had done a great deal of damage to the environment. They were interested in knowing how this had come about, at least partly in order to understand how such damage might be ameliorated or avoided in future.

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302 Beilin and West, “Performing Natures: Adaptive Management Practice in the ‘Eternally Unfolding Present.’”
306 White, “Environmental History, Ecology, and Meaning,” 1114. The strong moral and political commitments behind environmental history were central to some in the field, particularly Donald Worster. See Cronon, “The Uses of Environmental History.”
307 Brown et al., “Can Environmental History Save the World?,” 3.2.
Australia’s own environmental history scholarship became prominent in the 1970s and early 1980s, at the same time as (but somewhat independent from) rising environmental Indigenous rights discourses. From the 1980s in Australia, a social turn in history challenged notions of singular tales and linear time, and began to value Indigenous ontologies and epistemologies. This was a significant, political and controversial step, that gave rise to right-wing political commentary from historian Keith Windschuttle and others, who sought out what Griffiths refers to as ‘a singular history and not a multiplicity of histories.’

Furthermore, historians carry a heavy burden of responsibility to their sources, informants, readers and audiences, and to the past itself. They are challenged to act ethically and use sound judgment when no clear answer lies before them. Historian Keith Hancock writes that history is ‘not a once-for-all achievement, but rather is a continuing effort, whose end – if ever there is an end – still lies far beyond sight.’ So too with ecological restoration conscious of history; a practice of continuing effort, that is at once in relationship both back and forward in time.

**Being practised in both ‘wilderness’ places and lived-in places**

Environmental history emerged as field in the 1960s and 1970s, particularly in America, where it considered the ‘changing relationships between people and nature and the entwined human and natural history of places.’ It had as its focus, conservation history, wilderness and national parks. The resulting narratives strengthened the dichotomy between places for ‘nature’ and places for ‘people’. Environmental history in Australian followed a different path. Here, it emerged as ‘a fairly inclusive, if somewhat diffuse, enterprise: an inter-disciplinary area rather that principally a sub-discipline,’ with foresters, geographers, naturalists and farmers all contributing to its beginning.

Keith Hancock’s *Discovering Monaro* (1972) presented the

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308 For example, J. M. Powell’s *Environmental Management in Australia* (1976), and Eric Roll’s *They All Ran Wild* (1969) and *A Million Wild Acres* (1981), presented place-based, sensitive works crafted around relationships between people and place through time.


310 Hancock, *Discovering Monaro: A Study of Man’s Impact on His Environment*, 12; Griffiths, *The Art of Time Travel: Historians and Their Craft*, 43.

311 Griffiths, *The Art of Time Travel: Historians and Their Craft*, 42.

312 Griffiths, 60. See also Berry, “Another Turn of the Crank.”

313 Brown et al., “Can Environmental History Save the World?,” 3.1. Similarly, the origins of ecological restoration in Australia are in working landscapes.

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first of a new trend of historian and ecologists working together, most notable in forest histories of the 1980s and 90s. As Robin states: ‘[A]s time-scales get longer and documents give way to different kinds of archives, scientific enquiry takes over the study of the past, and histories are written by scientists.' Thus from the end of the twentieth century, deep time entered histories of Australia. Environmental historians have an important role in challenging dichotomies and opening up conversations between people, cultures, geologies and ethics.

**Being adept at complexity**

Uncertainty is the basis of complexity. A key strength of environmental history is its capacity to consider ‘complex interactions between social and environmental change’, particularly in settler-colonial contexts. In historian Jodi Frawley’s words, environmental history ‘helps us to understand the complex processes by which present environments have come into existence.’ She explains that ‘if we are to embrace the idea of change, process and hybridity in our landscapes then we must also challenge concepts that tend to constrain and simplify our environmental histories.’

Ecological restoration requires tools that help it to navigate real-world scenarios and environmental change. Ecologist David Bowman argues that ecologists ‘need to learn how to write good stories that do not disguise the uncertainty that surrounds their claims.’ It is through postmodernist and postcolonial scholarship that nationalist scientific narratives and norms can be challenged, and plural stories can emerge.

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318 Brown et al., “Can Environmental History Save the World?,” 18.
319 Brown et al., 18.
321 The continent plays a significant part too, as simple, short or linear tales clash with the realities born of ancient and stochastic ecologies. See Robin, *How a Continent Created a Nation*. 
Environmental histories are not distillations of truth, but rather, are culturally contingent narratives with multiple meanings.\textsuperscript{322} They can be used to promote a range of stories, and how these stories are framed is integral to the outcome of the scholarship. As historian William Cronon has illustrated, the same historical data can be analysed and interpreted to arrive at different stories of human and environmental change. In doing so, he demonstrates the subjectivity in historical storytelling, where stories move into the realm of value, and where they ‘belong as much to rhetoric and human discourse as to ecology and nature.’\textsuperscript{323} In 2001, Bowman warned of the tendencies for environmental historians to ‘gloss-over uncertainties and over-generalize in order to make psychologically satisfying stories.’\textsuperscript{324} In this work, engagement with material realities and local politics helps to retain specificity and complexity but plural and sometimes competing narratives remain.

Environmental history can also be more inclusive. One of the great feats of recent disciplinary history has been to bring voices from the past previously held silent: women, minorities, Indigenous peoples and the non-human world.\textsuperscript{325} Griffiths asks of Australian history: ‘[H]ow do we measure human suffering or ecological loss, particularly as the full dimensions of both are still becoming apparent?’\textsuperscript{326} Historian Heather Goodall argues that the boundaries of western paradigms of nature must be transcended in order to recognise the ‘effects of colonialism on our understanding of pre-invasion and well as post-invasion ecologies…and politics.’\textsuperscript{327} Environmental history is by no means the only voice that is required. Goodall continues:

> Indigenous voices are now being heard directly as Aboriginal writers and historians explain their cultural responsibility for country. None of them, however, would locate themselves in ‘environmental history’ nor see ‘conservation’ as their focal interest.\textsuperscript{328}

\textsuperscript{322} As such they need to be continually evaluated as new research comes to light, similar to a hypothesis as they are played out in practice. For reflections on this in adaptive management see Walters and Holling, “Large-Scale Management Experiments and Learning by Doing.”


\textsuperscript{325} Brown et al., “Can Environmental History Save the World?,” 3.3. See also Nash, Wilderness and the American Mind.

\textsuperscript{326} Griffiths, The Art of Time Travel: Historians and Their Craft, 89.

\textsuperscript{327} Brown et al., “Can Environmental History Save the World?,” 3.16.

\textsuperscript{328} Brown et al., 3.13.
Accordingly, the fields of environmental history, ecological restoration and ‘post’ or ‘de’
colonial studies are powerful allies.

**Political ecology**

Political ecology complements environmental history by insisting on a critical perspective of
stories told about places and relationships within them. With an intention to highlight the
inequalities resulting from human-ecological interactions as its foundation, political ecology is
a fitting discipline to guide a critical examination of ecological restoration cultures.

Political ecology fits within a broad umbrella of ‘critical theories’, influenced by post-
modernism and post-structuralism that do not assume fixity, rather, recognise the ways that
cultures shape the world and the world shapes cultures. In particular, critical theories enable
enquiries into how both realities and imaginaries have changed over time, while highlighting
plurality, complexity, and relationships of power.\(^{329}\)

A brief look at the shifts in political ecology thought demonstrate its substantive application in
this work. Amidst the rising environmental and political conscious of the 1980s, political
ecology gained traction. It combined a commitment to empirical observation as well as material
and social change, making political ecology ‘rooted in a combination of critical perspectives
and the hard-won insights distilled from field work.’\(^{330}\) In 1996, Richard Peet and Michael
Watts outlined a political ecology approach called ‘liberation ecology’ that aimed to ‘mark the
potentially liberatory or emancipatory potential of current political activity around environment
and resources.’\(^{331}\) Then in 1997, Simon Batterbury and others insisted on a critical gaze in
political ecology so as to consider both material biophysical environmental change and social
and political constructions of human-environment relations.\(^{332}\) Batterbury and others advocate
‘hybrid research’ which, they argue, can ‘consider knowledge claims from varied sources, but

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\(^{329}\) This is a powerful capacity for ecological restoration in the present context – that is – being able to critically engage in the
social and cultural constructs embedded in the practice while remaining grounded in biophysical realities and environmental
needs.

\(^{330}\) Rocheleau, “Political Ecology in the Key of Policy: From Chains of Explanation to Webs of Relation,” 716. See also Blaikie,
The Political Economy of Soil Erosion in Developing Countries. For differences and similarities between political ecology and
Introduction.

\(^{331}\) Peet and Watts, Liberation Ecology: Environment, Development, Social Movements, 2.

\(^{332}\) Batterbury, Forsyth, and Thomson, “Environmental Transformations in Developing Countries: Hybrid Research and
Democratic Policy,” 126.
also acknowledge that its subject (environmental degradation) is variously constructed from physical and social viewpoints. 333

With these turns, political ecology is able to facilitate environmental research that contributes to political and cultural debates with the aim of democratising practices, while remaining grounded in practical environmental management challenges. In doing so it overcomes the risk of constructivist social sciences that can be charged with presenting an ‘anything goes’ approach to environmental management. In her 2008 paper, Dianne Rocheleau presents two more recent trends in political ecology pertinent to ecological restoration cultures: ‘increasing engagement with activism, situated knowledge and social movements; and, a return to ecology, science and the embrace of complexity.’ 334 The foundations of political ecology and the more recent trends in the field make it a powerful lens through which to understand the situated, complex and real-world politics of ecological restoration work.

**Decolonising methodologies**

Social imaginaries and environmental management practices participate in the ongoing violence of colonisation. This thesis posits ecological restoration has been involved in repressing certain aspects of local peoples and places, but that it can also participate in giving voice to them.

Since the early 2000s, there has been a growing critique of Western Euro-centric settler mentalities that endure in many environmental management discourses. Decolonising methodologies work to highlight, and then unwind, ever-present colonial legacies in present-day mentalities and practices. 335 Decolonising methodologies are based on the argument that new tools are necessary to continually amend thoughts, systems and actions so as to disrupt settler-colonial violence. They respect the sovereignty and endurance of First Nations peoples and cultures: questioning normative constructs, challenging hegemonic practices, opening up to plural world-views, centring Indigenous ways of seeing and knowing and calling out

333 Batterbury, Forsyth, and Thomson, 128.
334 Rocheleau, “Political Ecology in the Key of Policy: From Chains of Explanation to Webs of Relation,” 721. Rocheleau outlines liberation ecologies, post-structural political ecologies, and feminist political ecologies in particular amongst powerful subfields leading these trends.
335 Tuhiwai Smith, Decolonizing Methodologies; Held, “Decolonizing Research Paradigms in the Context of Settler Colonialism: An Unsettling, Mutual, and Collaborative Effort.”
practices that further the settler-colonial project. Like ecological restoration, decolonising is never complete, but rather works to engage members of a community within the layered material and social tapestry of their place. Decolonising methodologies can strengthen ecological restoration critique by insisting on identifying, questioning and challenging colonising structures and making visible those aspects of local place omitted from dominant colonial narratives.

A hybrid toolkit
The combined tools from environmental history, political ecology, and decolonising methodologies provide the basis for wider critical insights and together form this thesis’ theoretical approach to research. Collectively, they work to give voice to silenced perspectives and peoples and connect historical insights with contemporary debates about environmental management discourses. In each field, place and time are paramount, and local experiences, knowledges and material realities are central.

Techniques employed include historical discourse and content analysis, semi-structured interviews, community workshops, participatory action research, participant observation and walking. In addition, creative journaling and artistic expression are

336 Importantly, scholars have clearly distinguished ‘decolonial studies’ and ‘decolonising’ from the term ‘post-colonial’. Post-colonial implies (incorrectly) a move beyond a colonising presence.


339 Following Bryman, Social Research Methods. A broad range of content have been included in order to understand local environmental histories, as well as histories of the science, practice, and cultures of ecological restoration.

340 Interviews were developed using a grounded theory approach as outlined by Bryman and Layder’s methodological framework of adaptive theory (Layder, New Strategies in Social Research: An Introduction and Guide; Bryman, Social Research Methods). Interviews were recorded with a hand-held audio recorder and were partially transcribed and open-coded to establish themes (following Layder, Sociological Practice: Linking Theory and Social Research.) Indicative interview schedules were designed with careful omission of positivist research tendencies. Full or partial transcripts, or material to be quoted (as appropriate for each place) were shared with research participants for an opportunity to comment. Social research was conducted with the approval of the Melbourne University Human Ethics Committee, project number 1545274.1

341 Community workshops and participatory action research principles were enlisted in Broken Hill, as described in B3: Sand.

342 Participant observation was carried out in Bermagui, as described in B3: Sand.

343 As a method of being in place, ‘walking’ is included as inspired by phenomenological thought. In each place, I walked alone, and participants took me on walks. Through encounters with biophysical realities, stories emerged. This fits within the field of phenomenology, often tied back to the philosophy of Merleau-Ponty, is particularly salient for studies of ecological restoration as it rejects nature-culture dualisms and locates people in the world, expands emotional encounters, and ‘remains
employed, because as Robin comments, art allows ‘the landscape…to have porous edges.’ Collectively, an iterative, emergent, hybrid methodology results. What it comes down to, is taking time to listen with generosity and an openness to reconfiguring dominant cultural assumptions and ideas. Within the relationship between past, present and future, stories emerge that provide insight into the social framing of contemporary restoration debates. Our individual and collective imaginings and our understanding of history are world-making, just as is the absorbent, liminal, mobile terra under our feet.

With these tools in our pockets we now turn to three examples of specific, local stories of restoration cultures in south-eastern Australia. In these stories exist opportunities to put ecological restoration cultures with their historical context and to build collaborations that call out, and address, imaginaries, politics and power.

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open, recognising that understanding is of the moment, a merely temporary gestalt.’ (Hay, Main Currents of Western Environmental Thought, 14.)

Robin, Dickman, and Martin, Desert Channels Impuls. to Conserv., 77.

Detailed methods for each place study are outlined within.
Part B: Research Practice
B1 | Dust

Figure 7: Location of field site, Broken Hill, NSW. Source: author.
Background to research

Granite outcrops sewn together by ghostly gums carry me north, into tired creams and cool greys where the land flattens, and the birds grow ever more eccentric. Through mesmerising mallee the crested squawkers fly west, to rich browns where the soil begins to warm and settle into salmon-pink. I roll into Broken Hill (fig 7) and step onto red-brown dust, next to a sign that reads ‘Regeneration Area: National Trust Listed 1966’.

Stochastic ecologies and ephemeral rivers typify the inland. Vast climate and weather patterns drive often-unpredictable scenarios. Thrifty, tough, brittle, reactive, strident and fragile ecologies result. Arid and semi-arid lands make up 70 per cent of Australia and are home to a significant proportion of the nation’s threatened and endangered mammals, birds and plant species. Arid ecologies rely on a range of techniques to cope with extremes. Complex systems of salt exchange, water retention, sclerophyllous foliage, mass reproduction, and seasonal migration allow beings to thrive in trying circumstances. The ecology of arid Australia is patient. It is an ecology shaped by time; time that is battered quickly and violently by European pastoralism and mining.

Dust drives an emerging environmental consciousness and an early example of Australian ecological restoration. Located in the remote arid mining city of Broken Hill, layered histories in ‘The Regen’ [pronounced Re-Gen] are drawn out. The cultural origins of ecological restoration are framed within a growing settler understanding of ecological response to degrading land uses. The complexities of restoration in mining contexts are articulated so as to trouble singular dominant narratives of place. I explore what the changing relationships with The Regen contribute to contemporary dialogues on the cultures, ethics and historical drivers of ecological restoration. I then write from the perspective of a practitioner, brought in to work with the broad range of stakeholders in The Regen to facilitate discussions about the future of The Regen.

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Dust: History

Dust & Broken Hill

The ‘Dirty 30s’ were a time when Australia, like the mid-west United States of America, was suffering from vast soil erosion and topsoil loss.\textsuperscript{347} Overgrazing by rabbits and hard-hooved animals, and the mass clearing of vegetation removed the continent’s capacity to hold onto the thin crust of old Earth that is so vital to life. It was a dust bowl. Across the world, relationships developed to share knowledge and strategies to arrest topsoil loss.

In 1865, Surveyor-General George Goyder assessed ecological variation and defined the boundary between land that was suitable for cropping (to the south) and land suitable only to grazing (to the north). Surveyor-General George Goyder’s 1865 report was intended to encourage closer settlement south of the Goyder line, however the irregularity in the climate quickly intervened.\textsuperscript{348} That same year, heavy rainfall allayed fears from the general public of the risk of drought, and the frontier mentality prevailed. As historian Kirsty Douglas writes, the early 1870s ‘rapid expansion northward’ overseen by Commissioner for Crown Lands Arthur Blyth, bluntly ‘ignored the cautions of senior bureaucrats like Goyder.’\textsuperscript{349} The growth and subsequent decline of arid Australia was spurred on by a confluence of ‘[H]istorical and economic imperatives, technological fixes, wishful thinking, and the coincidence of above-average rain for a number of years.’\textsuperscript{350} Robin explains that it was within the semi-arid zone beyond Goyder’s Line that ‘Australia’s earliest systematic ecological research was established’, driven by an idea that Australia should “make the desert bloom”.\textsuperscript{351}

From the 1920s, researchers in arid Australia began to study the ecological systems that they were affecting, sensing the degradation that was to come. Those from the University of South

\textsuperscript{347} Shelck, \textit{Nature’s Line: George Goyder: Surveyor, Environmentalist, Visionary.}
\textsuperscript{348} Douglas, “For the Sake of a Little Grass,” 101.
\textsuperscript{349} Douglas, 104.
\textsuperscript{350} Robin, \textit{How a Continent Created a Nation}, 104. See also Shelck, \textit{Nature’s Line: George Goyder: Surveyor, Environmentalist, Visionary.}
Australia worked with the Waite Institute for Agricultural Research on the ecology of arid lands, producing documents that mapped out the characteristics of local species such as Saltbush and Bluebush (Atriplex-mariena complex) and their response to grazing pressure.\textsuperscript{352} At this time, scientific concern was focused on the desire to maintain arable lands, and to guide the development of the arid interior.

By the early 1930s, the interior of Australia was blowing away. Dust storms and sand drift were rife, particularly in areas where rapid population growth concentrated the impacts of grazing and clearing. Australia’s story of soil loss was not a unique event. In Muir’s words:

Australia did not just have a ‘Dirty Thirties’ like the United States and Canada – it had a dirty thirty years. Dust storms were increasing in frequency, the Great Depression hit hard and evangelical soil conservationists attracted public attention, but Australia’s cultural iconography of rural decline, land degradation and economic collapse were never associated and confined to a single ‘event’ like the Dust Bowl of Northern America. The boundaries – cultural and ecological – are more diffuse.\textsuperscript{353}

The discovery of a significant ore body within the jagged hills in far southwest New South Wales in 1883 marked the rapid expansion of the inland city Broken Hill. The local mining industry was booming at the same time as water provisions were stretched and sand-drift and dust were increasingly mobilised. Severe dust storms followed each significant period of drought (1902-03, 1925-26, 1941-46, 1948-51).\textsuperscript{354} Precipitated in part by recognition of environmental decline and soil loss, ecological thinking was emerging in Australia, and soil conservation concerns were growing. The 1930s were a time of desperation and response.

The complex series of events that reshaped inland soil is conveyed by historian Alan Barnard, who writes:

[B]y 1894 there were just under eight million sheep west of the Darling–one-seventh of the whole of the colony’s sheep and nearly half as many as there were in all Queensland’s vast arid sheep walks. From the late eighties, moreover, the sheep were sharing their feed with uncontrollable rabbits. In the early nineties the grasses and bushes had been eaten thin and low. Then the long


\textsuperscript{353} Muir, The Broken Promise of Agricultural Progress: An Environmental History, 129.

\textsuperscript{354} Albrecht et al., “Resilience and Water Security in Two Outback Cities.”
drought of 1895-1902 carried the deterioration to a climax. Starving stock grubbed out grass roots, stripped saltbush and mulga irreparably. Bared of vegetation, surface soils were eroded by winds to create man-made deserts. In only a handful of years since has the erosion carried as many as half the stock run there in 1894: the restraint imposed on stocking rates by nature was reinforced by government regulation of lessees, imposed in the hope that regeneration could be encouraged.355

As Muir powerfully sums up: "[D]ust became synonymous with agricultural crisis and became symbolic of the broken promise of agricultural progress."356

In the late 19th and early 20th centuries, Australia remained brimmed with a prospecting culture searching for untapped ore bodies. Mining became the final straw for ecological limitations, bringing with it booms of population, clearing, animals, and the residues of toxic waste.

Between 1936-1938, a regeneration project was established in the remote city of Broken Hill. It is now considered one of the earliest examples of ecological restoration in the world. This section explores an ambitious effort to hold back sand drift and dust and highlights the relationships between ecological restoration, mining and a growing appreciation for ‘nature’ in Australia. Triggered by dust storms and sand drift, local people, industry and council collaborated to restore a vegetated green belt around their city.

The next section seeks to understand the layered histories of ‘The Regen’ today, as the shifting contingencies of climate, politics and global economy corrode this fragile fortress.

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356 Muir, The Broken Promise of Agricultural Progress: An Environmental History, 111.
Dust: Practice

Restoring Broken Histories
As published elsewhere in a modified form.357

In 2009, a vast red dust storm rolled into Broken Hill from the west. It blocked the sun, slipped under doorways, and cast a suffocating blanket over the land; a reminder of the illusive and timeless essence of the great deserts that surround the arid Australian city.358 Local artist and teacher Rick Ball describes his home as ‘an ocean liner in a giant sea of sand.’ At 512 kilometres from the nearest capital city of Adelaide, historian Bobby Hardy has described Broken Hill as ‘corner country.’ Regardless of whether one comes from Mildura or Afghanistan, a visitor is considered to be merely from away. Despite independence and isolation, Broken Hill is made of many peoples, cultures and practices; intricately woven into relationships within its region and across the globe. A prosperous settler-industrial heritage in the face of challenging ecological conditions is celebrated; but time and time again, this ocean liner is buffeted by intersections of colonial imaginaries and ecological realities, ancient geologies and global economies.359

Accounts prior to settler land use describe the country around Broken Hill as ‘clothed in vegetation, and support[ing] a profusion of fauna.’360 Frontier pastoralists marched north of Goyder’s line, defying predictions of agricultural success based on rainfall, until ‘….much of

357 This section is published in a modified form in The Journal of Australian Historical Studies (2017): Pearce, “Restoring Broken Histories.” The paper was awarded both the Mike Smith prize for Environmental History and History and Philosophy of Science through the National Museum of Australia (2016), and the Ken Inglis postgraduate prize for a history paper through the Australian Historical Association Conference (2016). Reviews can be viewed at: www.environmentalhistory-au-nz.org/2016/12/lil-pearce-wins-ken-inglis-postgraduate-prize-2016/, accessed 12 April 2019.
Between July 2015 and March 2017 archival research, semi-structured interviews, informal conversations, and a community workshop through an artist in residence program (June 2016 through a Broken Hill Art Exchange) were conducted. The five artworks not labelled as figures were drawn for this paper by the author. Thanks to all who took part in the study; Broken Hill Outback Archives and Barrier Field Naturalists Club for historical material and image reproduction permission.
359 Ball, “Interview with Author.” The idea of the desert as an inland sea has been widely used: see Robin and Smith, “West into the Desert.” Also Hardy, “West of the Darling.”
360 Webber, The Greening of the Hill: Re-Vegetation around Broken Hill in the 1930s, 14.
the West Darling area, showed the deleterious effects of overstocking.361 The traditional land
of the Wiljakali people was forcibly claimed by settlers, then, for close to 100 years, overgrazed,
cleared for timber, trampled by an onslaught of introduced species and mined. Silver, lead and
zinc were first discovered in 1883 and much of Broken Hill was founded on this mineral
wealth.362 Mining operations drastically altered natural contours and fluvial processes. A
 parched and broken ecosystem remained, stripped of its capacity to ‘bounce back’ or contain
the movement of old, unstable soils (fig 8). After ‘a period of deterioration unexampled in the
history of New South Wales,’363 the ocean liner was beginning to sink. Growing rabbit plagues
instilled further desperation for addressing land degradation in Australia and responses were
being sought.

By the early 1900s, overgrazed arid areas of the American mid-west and Australia
simultaneously found themselves confronting the effects of unfettered colonial land
manipulation and extraction on old tired soils. Scientists and land managers made attempts to
arrest land degradation and restore productive, habitable land; sharing approaches between
countries. In 1904 Robert Peacock led a trial of old man saltbush (Atriplex nummularia) on the
Coolabah experiment farm, one of many experiments that would ensue. In 1926, Bentley (TGB)
Osborn began to research the impacts of grazing on saltbush and bluebush (Atriplex-Maireana
spp. complex) at the Koonamore Vegetation Reserve, a gift to the University of Adelaide from
the pastoral company that was concerned about soil erosion in the area.364 In 1934 the New
South Wales government established the New South Wales Erosion Committee.365

The vision for the Broken Hill regeneration areas emerged amidst a burgeoning shift in
ecological consciousness and the formalisation of the discipline of ecology in Australia. ‘The
Regen’ is the affectionate name for the reserves (1, 715 hectares) of regenerated land that was

361 Morris, Plantlife of the West Darling, Forward; Kennedy, Silver, Sin and Sixpenny Ale: A Social History of Broken Hill
1883–1921, 7. See also Sheldrick, Nature’s Line: George Goyder: Surveyor, Environmentalist, Visionary; Lawrence,
Capitalism and the Countryside.

362 Blainey, The Rise of Broken Hill. These ancient mineral rich soils were the nursery for the now multinational BHP Billiton.
Note: Broken Hill experienced impacts of sheep grazing prior to the discovery of the Orebody in 1883. See Landorf, “Public
History: A Sense of Identity and a Sense of Place: Oral History and Preserving the Past in the Mining Community of Broken
Hill.”

363 Peacock, “Our Western Lands: Their Deterioration and Possible Improvement,” 652. in Muir, The Broken Promise of
Agricultural Progress: An Environmental History, 77–78.

364 Muir, The Broken Promise of Agricultural Progress: An Environmental History. See also Robertson, “Osborne, Theodore
George Bentley.”

established between 1936 and 1938. In this remote part of semi-arid Australia, a ‘campaign against the sand’ was launched to save mining practices, profitability, and lifestyle, by re-establishing a local arid-ecosystem around the city to reduce sand-drift. The demonstrated ability of ‘natural recovery’, and recognition of the value of locally adapted species were critical to the plans. Albert Morris was the leader of The Regen enterprise, working closely with his wife Margaret E. Morris, his employer, the Zinc Corporation, and fellow workers William S. Robinson, Asdruebal J. Keast, Maurice A. Mawby and Jack Sougall. The project was closely entwined with the passions and expeditions of the Barrier Field Naturalists Club (hereafter BFNC); a group established in February 1920 and discussed further below.

Incrementally, the team fenced out a reserve around the town that excluded stock and rabbits. Saltbush and a range of trees species were planted and irrigated to hasten the process of recovery of a ‘vegetation barrier’, with the hope that it would become self-sustaining through natural regeneration. In 1936, support of the Zinc Corporation and the Broken Hill City Council were confirmed, with both mining lease and commons land being fenced off from public use for the land management project. This was a case where environmental actions were united with economic and industry incentives. By 1938, predator proof fencing necessary to reduce the ecologically detrimental impacts of introduced rabbits and goats was complete. The Regen formed a partial boundary that defined the southwestern extent of the city. Due to its success and popularity, it was expanded to form an almost complete girdle around the town by 1969 (fig 9). In 1991, The Regen was listed by the National Trust of NSW for being an essential cultural heritage asset to the city. In 2014, Broken Hill became Australia’s first ‘Heritage City’, and The Regen was included in the National Heritage Listing under the Environmental Protection and Biodiversity Conservation Act 1999. The relationships to mining, the

367 For the significance of this collaboration in conservation history see Robin, *Defending the Little Desert: The Rise of Ecological Consciousness in Australia*, 22.
368 Reproduced with permission from Figure 7 in Jones, “Evolution and Significance of the Regeneration Reserve Heritage Landscape of Broken Hill: History, Values and Significance,” 49.
pioneering aspects of the project, and the leadership of Albert Morris are applauded. The Regen has become a powerful tale of man asserting control over nature in the desert, a fable of positive community and mining industry partnerships, and a visible buffer against ongoing destructive land uses. It has also greatly contributed to the development of arid ecology science.\textsuperscript{371}

As restoration ecologists look to ‘reference ecosystems’ to define what to restore, Albert Morris drew on local seed collection and surveys, often carried out while on BFNC expeditions. In the absence of detailed pre-disturbance ecosystem data, Morris determined through observations that the landscape prior to mining would have been made up of patches of mulga (*Acacia aneura*) and wilga (*Geijera parviflora*), with smaller patches of white pine (*Callitris columellaris*), belah (*Casuarina cristata*) or black oak (*Casuarina lepidophloia*) accompanied by dead finish (*Acacia tetragonophylla*), and nelia (*Acacia loderi*), with *Atriplex*, *Eremophila*, *Myoporum*, *Maireana*, *Dodonaea* and *Olearia* species. Following trials in the Morris’s garden, local species were grown from seed in tin cans from local homes and businesses, watered with wastewater from the men’s washhouses, and planted out.\textsuperscript{372}

Today, The Regen’s flora, fauna, fences and topography vary throughout. In some places, it boasts mulga (*Acacia aneura*) and quandong (*Santalum acuminatum*) with a saltbush-bluebush (*Atriplex-Maireana* spp.) complex understorey and low flowering plants and bryophytes. In others, large holes pierce rusting fences and dust returns through the combined effects of deleterious human use and drought.

The Regen has many aspects of ecological restoration; a practice that aims to return damaged and degraded ecosystems to conditions that emulate the local structure and function prior to ecological disturbance. For this reason, it is retrospectively celebrated in the ecological restoration community as one of the first formal ecological restoration projects in the world. In


\textsuperscript{372}Morris, *Plantlife of the West Darling*; Landorf, “Public History: A Sense of Identity and a Sense of Place: Oral History and Preserving the Past in the Mining Community of Broken Hill.”
August 2017, Albert Morris was posthumously awarded the inaugural ‘Albert Morris Ecological Restoration Award.’

On field trips between 2014 and 2017, I explored what the histories of The Regen have to teach about the rising ecological consciousness in Australia, and what they contribute to dialogues on the cultures, ethics and historical drivers of contemporary ecological restoration. Static, colonially-framed ideas of nature in contemporary ecological restoration projects are obsolete. Recognition of Indigenous people, cultural landscapes, change over time and climate change point out the folly in fixed ecological baselines. As the story stands, vital histories of The Regen have been overlooked. These include relationships with ‘nature’, the important role of women and art, Indigenous cultural heritage, mining waste disposal and climate extremes.

The ensuing five stories of The Regen expand understanding of local environmental histories and signify their relevance for present environmental trepidations. Each is told through the angle of a present indigenous plant species, chosen for its specialist life history that opens to an alternative perspective on the past, present and future. These five histories are not linear; rather, they form a tapestry. Each history offers a different contribution to the story of ecological restoration within a settler-industrial past. In the words of Broken Hill Archaeologist Sarah Martin, ‘it’s not recreating the past, but it’s that whole thing of you can’t understand your future unless you understand your past, so you have to just keep plugging away at trying to get those stories told.’

373 Described further in *Dust: Reflection*
375 Martin, “Interview with Author.” The ‘eternally unfolding present’ is a useful framework for plural histories to exist concurrently as they emerge, rather than a singular history that reifies exclusionary views. See Cook and Wagenaar, “Navigating the Eternally Unfolding Present: Toward an Epistemology of Practice.” Other aspects to the ‘uncomfortable side of the Australian legend’ are depicted in the Broken Hill landscape in films *Wake in Fright* (1971) and the original *Mad Max* trilogy (1979, 1981, 1985). See Elder and Moore, “Re-Reading the Australian Imaginary.”
Figure 8: The eroded Broken Hill Common of Regeneration Site A Circa 1936. Reproduced with permission of Barrier Field Naturalists Club.
Figure 9: Map of Broken Hill depicting the 2009 extent of the Regeneration Area. Reproduced with permission of David Jones.
Learning to Love your ‘old man’ Saltbush
The resilience and character of old man saltbush is foundational to the story of The Regen. Public health researcher Frances Boreland says ‘[T]his is saltbush country, so learn to love your saltbush!’ She speaks to a rising ecological consciousness and an appreciation for the unique beauty of local plants that underpinned the growth of The Regen.

The BFNC was established in 1920 by self-taught botanist Albert Morris and expert ornithologist W.D.K. MacGillivray. The group was one of the earliest field naturalists’ clubs in Australia, running monthly meetings and field trips and wildflower shows that continue to this day. At the time of its formation, the club had 74 members, but grew quickly to 179 by 1924. They made a significant contribution to Australian natural science thorough studies undertaken west of the Darling River by highly skilled members. While the BFNC was part of an imperial movement of naturalist clubs that classified, documented and colonised nature, they also provided opportunities to learn about and appreciate local ecologies.

Albert Morris’ expertise was in flora, and on outings with the field naturalists Morris gathered a collection of some 5000 pressed plant specimens from the Darling and Barrier regions. Morris was part of an international flow of botanical specimens and knowledge spurred on by a marriage of the love of nature and a thirst for scientific solutions to land degradation, sending plants across the globe and receiving approximately 2000 international specimens to his collection. Locally, he witnessed the capacity of the desert to heal after droughts, and became ‘…quite convinced that Australia has all the plants she needs to regenerate her dry places.’

Through trials, he determined that ‘local provenance and or local Barrier Ranges indigenous species, from seed collected locally, were the more resilient and successful species.’ By the 1930s the Regen in Broken Hill and the Curtis Prairie restoration project at the University of Wisconsin Arboretum were being planned. More than just a technical fix, these projects were infused with a rising ecological ethic. Aldo Leopold had published his seminal essay ‘The

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376 Boreland, “Interview with Author.”
377 See further reflections on BFNC endurance in Dust: Reflection
379 Morris was not specific about only using indigenous flora, having included in his trials many South American and other arid environment species. Morris, Plantlife of the West Darling, Forward.
Conservation Ethic’ in 1933. Morris, while perhaps less overtly philosophical and poetic than Leopold, was enamoured by the workings of the local environment; lamenting local extinction, promoting ecological relationships and flows, and stating, in 1936: ‘We need to be very careful before introducing fresh plants – our own did the work well, before the advent of white men, and could do it again, if given a chance.’

Webber’s ‘story of vision, of men, of courage,’ denies the significant contribution of women to the BFNC and The Regen. The BFNC provided a professional place for settler-women within ecology and botanical knowledge, at a time when they were not permitted to work in government jobs once married. In the Outback Archives there are folders of hand painted photographs, copper printing plates and descriptions of the beauty of the local landscapes. Artistic activities were considered appropriate for women in the nineteenth century, and through art, women were able to participate in the detailed study of local flora. In the BFNC, their involvement extended further, to managerial and advisory roles.

Often lost in the shadow of her husband’s esteem, Margaret Morris was involved in all stages of The Regen. Margaret was a passionate naturalist, botanist, gardener and artist. After Albert’s untimely death in 1939 to a brain tumour, Margaret continued her work on The Regen, becoming the botanical advisor to the Zinc Corporation Ltd. and remaining a continuous active member of the BFNC until 1943. Margaret died in 1957. Her unpublished paper *Plant regeneration in the Broken Hill District* provides a perspective on the country ‘before the advent of white man about 1860.’ In 1939, an article in the Barrier Miner read: ‘Mrs. Morris has a botanical knowledge not surpassed by any other resident of Broken Hill.’

Another influential woman for local botanical appreciation, Florence (May) Harding, captured the beauty of the country in her botanical art (fig 10). She worked closely with the Morrises and held the position of the Secretary of the BFNC from 1944 - 1971 within a membership of 45 years. She taught art and botany at the Broken Hill Technical College and was a foundation

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380 Blewett and Cottam, “History of the University of Wisconsin Arboretum Prairies.” See also Cronon, “A Place for Stories: Nature, History, and Narrative.” for conflicting responses to and stories of dust. Thanks to Tein McDonald for bringing this concurrent timing to my attention.


382 Webber, *The Greening of the Hill: Re-Vegetation around Broken Hill in the 1930s*, Ch. 2.


384 “Twenty Years of Botanical Study: Mrs. Morris Doing Work of Late Husband,” 1.
member, secretary and treasurer of the Willyama Arts Society. May Harding’s artwork inspired local naturalists and featured in 2010 in a BFNC 90th year celebratory exhibition.\footnote{Camilleri, \textit{Some Outstanding Women of Broken Hill and District}.} In 2016 the Broken Hill Outback Archives were gifted a previously unseen collection of BFNC archival material including hundreds of painted glass slides, exemplifying the skill, beauty and care involved in encounters with the local environment.\footnote{This collection is in the process of being digitised. For more information contact Broken Hill Outback Archives.} Drawings in this paper of plant narrators are a tribute to the contribution that women and art made to the evolution and ongoing appreciation of local flora.

The Regen is a manifestation of evolving settler relationships with the local ecologies: underpinned by a ‘scientific’ structuring of nature, but embracing appreciation of beauty through encounter, seed collection and art, and along the way, providing opportunities for women. Women continued to be important in ecological restoration in Australia. Two sisters, Joan and Eileen Bradley were to become the protagonists of ‘The Bradley Method’, an approach to restoration that focuses on nurturing natives and working from the best quality patches out.\footnote{Bradley, \textit{Bringing Back the Bush: The Bradley Methods of Bush Regeneration}; Kendal et al., “Led up the Garden Path? Weeds, Conservation Rhetoric, and Environmental Management.”}
Figure 10: Example of May Harding’s botanical artwork, depicting the mulga that was cleared for timber to build and fuel the smelters. Reproduced with permission of Barrier Field Naturalists Club.
The Hidden Life of the Sturt Desert Pea
The Sturt Desert Pea spends much of its lifecycle lying dormant, waiting for rain. It is easily overlooked if a short view is taken, until it cascades across the land like pools of blood, before retreating, again, underground. Through it, we are reminded of absences in histories of Broken Hill. By looking below the surface, a history of a peopled place stripped of its stories emerges. This is the land of the Wiljakali people, with local cultures extending back over 40000 years. Yet, as community development worker Paul Adcock suggests, their culture, knowledge and stories are mostly silenced in The Regen. Collaborative and consultative joint management programs that strive to retain and improve on knowledge, language and culture as part of ecological restoration projects are increasing, but this is not the case in Broken Hill.

The history of The Regen can be understood as an imperialist practice of classification, experimentation and control. The relationship between nature appreciation and treatment of Indigenous people in this country is complex and troubling. In the BFNC there was a fascination with Indigenous cultures. Newspaper clippings, photographs, and visits to ‘artefacts’ fill their archives. Sacred burial sites were excavated, artwork was consumed, and people were studied and documented along with plants and animals. Such outings were common ‘naturalist’ activities of the time, often with ‘experts’ brought in to interpret. Not consulting local Aboriginal people was as act of negligence. As local archaeologist Sarah Martin says, ‘the next station over…had this massive population of Aboriginal people living there, who were from the area, and who would've actually known.’

Indigenous cultural values of The Regen and other land in and around Broken Hill are denied. Broken Hill City Council does not have any ‘Aboriginal Places’ listed on their local


390 Martin, “Interview with Author.” In 1927, prior to The Regen, the BFNC successfully rallied for the protection of today’s Mutawintji National Park, one of Western New South Wales’ earliest land reservation initiatives. In September 1998 Mutawintji was ‘handed back’ to its original owners (despite no ceding of ownership in the first place) as a positive example of Indigenous-led co-management. See Sutton, “Aboriginal Ownership of National Parks and Tourism.”
environmental plans. Sarah Martin reported that in a meeting with the Council and a representative from the State Heritage Division:

one of the Councillors actually said there is nothing of significance to Aboriginal people in Broken Hill…And this other Councillor said no, we determined there was nothing of significance to Aboriginal people in Broken Hill or within the boundaries of The Regen reserve or anything like that. And I said, well what about all those archaeological surveys you paid me to do years ago? 391

A traditional owner, and a Barkindji woman from the Department of Aboriginal Affairs, express concerns about the absence of consultation with the Indigenous community, despite the fact that land their ancestors are buried in is regularly ‘blown apart’ and ‘dug up.’ 392 Few people speak of camps in The Regen for Aboriginal people, Cameleers, and other minority groups that continued to the 1980s, but it is full of ancient and recent tales of home. Rather than concealing difficult truths, Haraway advocates ‘staying with the trouble’, and Broken Hill has plenty. 393 European settlement excluded Indigenous people from their land, meaning, in Martin’s words: ‘…a lot of that knowledge has disappeared.’ While young people have a desire to maintain culture ‘the problem’, Martin says, ‘is that there are so few old people left who know anything constructive and important …there’s not a lot of time left to make sure that [it] all comes together.’ 394 Particular ways of understanding and being in relationship with local ecologies are held within Indigenous languages and knowledge systems. Rose’s work on ‘kin’ articulates that loss of such relationships are forms of eco-cultural genocide, thus vastly expanding what is considered in need of repair. 395 The observations of the Morrises and the BFNC could only ever see an already altered system from amateur eyes. Nobody will know what has been lost from this place or the intricacies of change over time, further derailing ideas of ecological restoration being able to return a ‘complete’ system. This is about how boundaries are being structured around ecology and identity.

The Regen may hold future opportunities close to the city for sites of recognition and remembering the Wiljakali culture that was present long before the decline and restore narrative.

391 Martin, “Interview with Author.”
392 Participants preferred not to be named.
393 Haraway, Staying with the Trouble: Making Kin in the Cthulucene.
394 Martin, “Interview with Author.”
Jaymie Norris from NSW Parks and Wildlife grew up playing in The Regen with local Aboriginal children and says he knew ‘every cave, every nook, every cranny, every Aboriginal waterhole.’\textsuperscript{396} These taught him about ‘the continual use of that landscape over thousands of years’ from which he learned about ‘our cultural heritage.’\textsuperscript{397} Jaymie tells me that such places are vital for Aboriginal children ‘trying to connect with their broken history.’\textsuperscript{398} Even when there are uncomfortable truths in the past, continuing silences participate in the same damaging process that led to the degradation of local land and culture. As an example of a rising ecological consciousness in Australia, The Regen portends a trend in ecological restoration to overlook Indigenous people, stories and local knowledge, and reinforce colonial framings and scientific ordering of a nature, romanticising settler-framed landscapes and constraining possibilities for healing.

\textsuperscript{396} Norris, “Interview with Author.”
\textsuperscript{397} Norris.
\textsuperscript{398} Norris.
Sick Dust and Poison Quandong
Quandong grows in The Regen amidst sick dust. Settlers quickly adopted this local staple food source and it continues to be enjoyed today in pies and jams. But captured within the fruit is Broken Hill’s dirty little secret: lead. The material toxicity remaining from mining operations tells another history of The Regen. This story speaks to ethics of responsibility and accountability in restoration in mining landscapes, which is too often relegated to unassuming locals. Sarah Martin tells me that in the 1980s the message from the Lead Centre was ‘if your child has got high lead levels then you’re a dirty bitch.’

The Regen would not have occurred were it not for the support of the Zinc Corporation and today the inescapable legacies of mining are of particular concern for public health. Lead has been mined in Broken Hill since 1884. Lead poisoning was evident among the early miners and their families but was seen as mainly an occupational health problem. Today, Lead exposure forms a ‘public health problem of global dimensions’ as it continues its migration from mineral to human veins and generates hideous health effects. Like an irreversible scar in geological strata, the ‘line of lode’ slices directly through the centre of Broken Hill: a mound of reversed rock, where history is brought to the surface and toxic remnants of smelting operations settle over the town.

In the southern end of The Regen, toxic mining waste is buried in ‘skimp dumps’ under earth taken from neighbouring land called ‘borrowing pits.’ These were established in The Regen in its beginning and are the only known mining skimps to unintentionally come under a National Trust heritage listing. The alkaline soil caps are intended to neutralise the acidic skimp piles and contain the toxic dust. Yet time, erosion and heavy rains collude to redistribute the skimp material, first through water then through air. Industrial sludge grey ripples of escaped tailings rest in the gullies. Then, under harsh sunshine, westerly winds blow the skimp material over some of the poorest parts of Broken Hill. Atop the tailings dams, kids ride their dirt bikes and families have motor-biking outings that kick dust into their faces. There are no skulls and

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399 ‘Sick dust’ is inspired by the first line of Judith Wright’s poem ‘Dust’: Wright, “Dust,” 23–24.
400 Martin, “Interview with Author.”
crossbones, and no maps, explanations or remediation actions offered. The boundary fence is meant to exclude people, but like in the past, The Regen continues as a social place. The legacy of extractive land use erupts into the present, contributing to intergenerational stories of disadvantage, disproportionate levels of childhood disability, and health concerns bearing fruit in the adult population. This is not a shock or catastrophic violence, but one that has evolved with the city. It dwells in the background of life, silenced but unremittently surfacing and disproportionately affecting the poor. This story is clear evidence of what literary scholar Rob Nixon calls ‘slow violence’, whereby socio-environmental injustices of the world’s poor often occur at rates not easily noticeable, and not well suited to big headlines.  

At the turn of the 20th century a Royal Commission was conducted in Broken Hill into the health impacts of lead. Then, in the 1980s the material heavy in metal was dug up, reprocessed and mobilised, and people started getting sick again. This triggered the establishment of The Lead Centre in 1994, a State government funded lead management program that ran for two years. Since then, funding, like ecological conditions have been both unpredictable and intermittent. The lead levels in Broken Hill’s children decreased between 1991 and 2003, but the rate of decline has slowed and requires further progress to meet Australian health standards. In 2014, 53 per cent of children in Broken Hill had blood lead levels above the recently released National Health and Medical Research Council draft reference value for lead. Children eat dust and get sick. The toxic dust carries a neurotoxin that is known to affect foetal and post-natal development and generate ongoing mental health and behavioural problems. Indigenous children are more likely to be affected; thought primarily to be due to proximity to ‘legacy lead’ (that which has already escaped form the ore body or building materials) that enters rental properties that are not built or maintained by landlords to keep out the dust. A simple backyard vegetable garden can have a fine coating of toxicity and private water tanks can increase risks of contamination. Containing and cleaning up lead is an urgent public health issue.  

403 See Nixon, Slow Violence and Environmentalism of the Poor.  
Minerals from Broken Hill are shipped around the world. Mining company fortunes foretell public health misfortunes. The town’s commitment to mining powered by global economies of extraction fills the pockets of international shareholders while locals suffer. In 1939, after the success of The Regen was apparent, the area was handed over to the municipal council. At the time, the mining companies recognised its importance and contributed 450 pounds annually to its upkeep, but this no longer happens. The bonds for rehabilitation of the sites are passed along with the exchange of mining leases, remaining set in the 1800s and drastically under-priced, and regulators that enforce rehabilitation come from other parts of NSW.

Best practice restoration of degraded lands of the western division of NSW will become increasingly important with changing climate and global market pressures. Well-adapted local native shrubs and grasses play a crucial role in stabilising soil and reducing toxin exposure. Long periods of no rain and high temperatures stress vegetation and enhance erosion, mobilising contaminated dust. Drought conditions also raise awareness. Public health researcher Frances Boreland says that when the environment is particularly dry and dusty it ‘makes huge visible plumes of dust…[and] people [are] very conscious of it.’ The Regen plays an important role in restraining toxic dust that blows about town, yet its future protection is fragile. Peter Oldsen, past Environment Manager at Broken Hill City Council explains that they made a conscious decision not to remove the few athel pines (*Tamarix aphylla* - a listed Weed of National Significance) from The Regen because for where they are they ‘don’t pose a problem’ and help to stabilise soil and ‘keep the ground in its current condition.’

Jaymie Norris, the Strategic Programs Officer for NSW Parks and Wildlife explains that layers of tenure confuse authority and responsibility. In 2016, the Council accidentally sold part of The Regen for development into a residential property, being unaware that the land was part of the reserve. In the south, Robinson College holds a school lease title, Perilya Ltd. hold an active mining lease, and the Council has a crown reserve all overlapping the same piece of land.

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405 Webber, *The Greening of the Hill: Re-Vegetation around Broken Hill in the 1930s.*

406 At present, the Rasp Mine (the largest mine in the centre of Broken Hill) has a bond of only 250 thousand dollars, though the NSW Environmental Protection Agency’s formula would calculate it today at 12 million. When attempts were made for it to be increased it went to ministerial appeal and was overturned (Sage, “Interview with Author.”)

407 Boreland, “Interview with Author.”

408 Oldsen, “Interview with Author.”

409 Oldsen.
the rumoured 120 million dollars’ worth of zinc in the tailings in The Regen does exist, the resource mentality may reign supreme. As Norris says: ‘if the mining industry identifies a resource, at that point all bets are potentially off. The values that it contains above the ground are trumped by the economic values that exist below.”

For some, lead risk has become normalised. Many families are involved in the mining sector, and generations of locals have lived through many awareness/response cycles. It can even be warped into something to be somewhat proud of through its unifying qualities; Landcare’s Wayne Lovis jokes, ‘we’re all lead-affected, we're all lead-heads, as we call ourselves,’ but the silencing of lead problems are not lost on newcomers. In 2016, the Environmental Protection Agency began a four-year public health program with three parts: remediation, research, and education. Ongoing challenges of responsibility and accountability remain. Locals are encouraged to remain ‘resilient’ for the Nation and ‘lead heads’ for the economy.

The Regen has many positive values, but also acts to pacify the ongoing structural realities of the impacts of mining that make their way into physical bodies and mentalities. This story supports concerns that ecological restoration can enable ongoing damage by promising remediation possibilities. The true costs, responsibilities and contributions of extractive industries are vital to include at policy and approval stages of project design.

410 Norris, “Interview with Author.”
411 Lovis, “Interview with Author”; Shroff, “Interview with Author.”
412 As warned by “Katz_The_Big_Lie.Pdf.”
Uncovering Coprinus-like connections
The small withered fruiting body of a *Coprinus* species peaks out of the ground. It is a brief look at the complex subterranean or hidden connections that typify The Regen.\textsuperscript{413}

Historically, The Regeneration corridor formed part of what was called *The Commons*. This public land was overstocked with cows, goats and horses from 1885, to provide meat and milk for the community, as well as cleared for timber.\textsuperscript{414} Since its inception, local people have been officially excluded from The Regen except where access has been formally granted by the Broken Hill Council, as a direct response to the degradation wrought by unchecked land clearing and grazing. Fencing signs read: ‘Regeneration Reserves, Keep Out, Trespassers Prosecuted.’ Yet the varied relationships between people and The Regen insist on continuing, disrupting ordered ideas of this environment and pushing back on tidy linear narratives.

Like many ecological restoration projects in Australia, a foundational component of The Regen was the erection of a predator-proof fence. Today, the fence is poorly maintained. Darryl Ford, the local ranger says that a significant section of the 75 kilometres of fencing needs to be replaced within a year.\textsuperscript{415} The Regen no longer has any allocated budget within the Council but fencing netting alone will cost approximately $300 per 100 metres. The fence is frayed, warped by decades of confrontation with people, animals and the elements. As Instone describes: ‘while the fence acts as boundary, it also permits, even invites, access. Fissures in the fence, gates, holes, breaks and passages, open the fence to flows and movement.’\textsuperscript{416}

Not far from the broken barbed wire there is a blue wooden cross, framed in the dappled evening light of the trees, a sign of one of the many campsites that existed around Broken Hill. Inside we see artefacts of use: pots and pans, fireworks, condom wrappers and rose quartz cairns. ‘People have had their first cigarettes, their first beers, their first bongs, their first love encounters’ here, Paul Adcock explains with a twinkling eye.\textsuperscript{417} We also see paths, planted patterns, belief, experimentation and care. After an initial period of the community learning to

\textsuperscript{413} The selection of a mushroom for this story is inspired by the critical environmental humanities work of Anna Tsing and Alison Pouliot: Tsing, “Unruly Edges: Mushrooms as Companion Species”; Tsing, *The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins*; Pouliot, “A Thousand Days in the Forest: An Ethnography of the Culture of Fungi.”

\textsuperscript{414} Webber, *The Greening of the Hill: Re-Vegetation around Broken Hill in the 1930s.*

\textsuperscript{415} Ford, “Interview with Author.”

\textsuperscript{416} Instone, “Fencing in/Fencing and: Fences, Sheep and Other Technologies of Landscape Production in Australia,” 376. This work on boundaries is revisited in *B2: Soil.*

\textsuperscript{417} Adcock, “Interview with Author.”
accept the project in its establishment, Paul says ‘you talk to anyone in Broken Hill and there’s nobody who would have a bad word about it.’ Today, members of the community relate to The Regen in ways many and varied ways. Some of these ways were voiced through contributions to a community art project run by the author (see fig 11-12).

*A fortress around the hill*

Overwhelmingly, The Regen is perceived as a protective fortress - a vegetation buffer that protects the town from the dust. Echoing the official information about the scheme and the dominant conquest over nature of the place, this understanding of The Regen positions it as an unequivocally valued and practical contributor to life in Broken Hill. Older members of the community still remember the early days before The Regen was properly established, while others have inherited tales of life before its existence. Romanticised views of The Regen protecting Broken Hill from the ‘untamed wilderness’ of the arid interior are increasingly challenged. As Peter Oldsen from the Environmental Protection Agency says, The Regen is ‘there to stop moving soils and act as a buffer’, but ‘doesn’t have any impact on the dust that’s generated after a ten-year drought’ coming from elsewhere. Over-confidence in the ability of The Regen to buffer the city may blind locals to the reality of their place on the edge of desert, as well as to other realities of culture, politics and health.

*A playground*

The Regen is as a private place for play, engagement with nature and the development of a strong sense of place. Early experiences in The Regen are foundational for many who grew up in Broken Hill, and now work in environmental management. Through physical encounter, people learn about environmental change and cycles and continuously reconstruct their ideas about nature. Wayne Lovis says: ‘[B]ack in the day we used to take our slug guns and our .22s

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418 Adcock.
419 In-depth interviews and a community participatory art workshop provided the material for these themes. A process of grounded theory was used, whereby data from social research was thematically coded and themes emerged from the research, following Bryman, *Social Research Methods*.
420 Oldsen, “Interview with Author.”
421 After the 2009 dust storms some local community members pointed blame at poor management of The Regen, having misunderstood what it was capable of. See Jones, “Evolution and Significance of the Regeneration Reserve Heritage Landscape of Broken Hill: History, Values and Significance.”
and we’d go in The Regen and play.’ Jamie Norris says: ‘as a child it had the mystery and the magic of the old English and European old-growth forest.’

An adventure park

The Regen provides open space with varied terraformed land for outdoor activities close to Broken Hill. Trotting tracks the size of football ovals, motor cross tracks, trail bikes, dog walking, and passive use are all illegally conducted here and repudiated to differing degrees. Walking through The Regen, it is impossible not to see the evidence of land-use that is ecologically damaging. However, unexpected results of this hybrid place also emerge. Not far from the leaking tailings dams a rusty old truck holds back erosion. And importantly, those who use The Regen in more passive ways (like dog walking) act as caretakers and keep an eye on the reserve.

An oasis

The Regen provides an oasis of respite and refuge from the desert environment. For those living in this extreme environment, being able to pass through, look out to, and visit green open-space provides rest and revitalisation. Walking with people through The Regen after rain brings reflections on vitality and hope, with a particular smile induced by the bright green of flourishing bryophytes. Susan Thomas says: ‘after rain, you feel yourself hydrated and moods do change according to the weather.’ Susan connects the resilient character expressed by the plant life with that of the Broken Hill community itself.

A nursery

The Regen is a place that nurtures the growth of new ways of being in relationship with local place. Creative and interdisciplinary proposals for land-use and management have been advanced, including public art, Indigenous cultural uses and tours, environmental education, and formal areas of public open space. Another Broken Hill local tells me optimistically that

422 Lovis, “Interview with Author.”
423 Norris, “Interview with Author.”
424 The term for old vehicles being used to hold back erosion is ‘Detroit Riprap’. See Allen, “Detroit Riprap.”
425 Thomas, “Interview with Author.”
with the right conditions: ‘you can actually create a rainforest here, it’s not impossible.’

Susan would love to see this happen, being inspired by the ‘possibility of Regen becoming a rainforest and aiming for something transformative.’

Entering The Regen without formal permission can incur a one thousand dollar fine, though it has never yet been issued. The council knows about the various uses of The Regen but have limited funding to act, and endorsing access would trigger unwanted Council liability. There are tensions here between the need to fence in the area (to protect the land from destructive use and protect the public from poorly managed toxic waste), and the need to encourage safe access (for open space, environmental education and to generate an ethic of care).

By excluding people under the guise of solely ‘protecting nature’ responsibility for human and environmental health is more easily evaded and the positive aspects of encounter and care are repressed. In 2017, Broken Hill City Council opened a formal walking track through part of The Regen. With the hope that this will formalise the opportunity for an ongoing connection with the project and for different stories to be told.

426 “Interview with Author.” Authors requested not to be named.
427 Thomas, “Interview with Author.” These ideas were inspired by international greening projects in arid or post-mine site contexts. For example, see The Eden Project, Cornwall, UK: http://www.edenproject.com/. The ‘rainforest’ comment comes from “Interview with Author.” Authors requested not to be named. There are ecological limits and problems for ecological restoration if rainforests were the aim.
428 The Broken Hill 2012-2016 State of Environment Report reads ‘[A] management plan for the Regeneration Areas will be developed over the next 2 years to ensure there is sufficient funding and actions taken to maintain these areas.’ However, in 2016 no plan has been developed and environmental staff were recently cut from the Council. See Broken Hill City Council, “2012 - 2016 State of Environment Report,” 16.
Figure 11: Contributions from ‘Stories from The Regen’, project led by the author with the Broken Hill Art Exchange, 17 June 2016. Source: author.
Figure 12: Close-ups of contributions from ‘Stories from The Regen’, project led by the author with the Broken Hill Art Exchange, 17 June 2016, depicting The Regen as: a place of childhood play; an oasis, and representing hope for future possibilities. Source: author.
Dead Finish - The last to go
Today, the ‘ocean liner’ of Broken Hill is at risk of drowning in the sand. The Australian desert is getting hotter and drier. Broken Hill’s future climate will be more complex and less predictable, making environmental management and erosion control more challenging. The concerns for land stability extend far into Western New South Wales. Geoffry Cullenworth, the local community manager for New South Wales Local Land Services Western Region warns of ongoing erosion west of the city and potential dune migration that could easily close roads in the future.429 Broken Hill City Council ranger Darrell Ford tells me what would be the last to go ‘…you know the dead finish one, when that dies, that’s the last thing that’s left…that’s why they called it Dead Finish.’ 430 This plant represents a story of resistance, resilience and in some cases, denial. No matter how remote, Broken Hill will not be spared from the local realities of arid ecology or the global impacts of climate change.

The Millennial drought (1996 - 2009) had a great impact on The Regen and surrounding ecosystems. Wayne Lovis and Carolyn Dart worried that if that drought kept on going, they ‘wouldn’t have any Regen’, and in 2009 established the Broken Hill Landcare group. Today, the small group of active individuals are part of a Landcare network that are scattered across the country that works almost completely on a volunteer basis. Since 2016, they had the part time strategic and practical support of a Regional Landcare Facilitator and a Local Landcare Co-ordinator. Mimicking the initial intentions for The Regen, their purpose is to build up the biodiversity and a seed bank so that it will regenerate without ongoing assistance, which Lovis refers to as ‘a resource for the future.’ Heavy rains can promote growth of seedlings that then die in the following droughts, exhausting seed supply. In the long term, The Regen is considered a critical source of local seed security for future regeneration work and native pasture improvement, because ‘…42% of the state doesn’t have an endemic seed bank.’ 431 Shifting ecological cycles can mean potential havoc for recruitment of new generations of plants. Along with the Riddiford Arboretum and the Living Desert Museum, The Regen lives on in Broken Hill as a place where members of the community can interact with local vegetation and become familiar with species that survive in the harsh conditions.

429 Cullenworth, “Interview with Author,“ 430 Ford, “Interview with Author,” 431 Sage, “Interview with Author.”
Even when using local species, lack of water makes active restoration increasingly difficult. In September of 2015, the Broken Hill Landcare group had about 4000 seedlings of a diverse range of species grown from local seeds ready to be planted out. Before planting they heard that by December, they would be on Level 3 water restrictions, so wouldn’t be able to water. Knowing this would be fatal they gave ninety per cent of the seedlings away. Lovis says: ‘We’re at a point now where we're not doing anything because we can’t.’\footnote{Lovis, “Interview with Author.”} For the moment, the Landcare group has shifted from planting to building up knowledge around seed collection and plant identification training, but water continues to be a concern.

Local water politics are volatile, heightened by the reliance on water at the lower reaches of the Darling River. Flows to Wilcannia and the Menindee Lakes are implicated in the bedlam of the Murray-Darling Basin where big industry cotton producers upstream extract water. Water coming from Menindee Lakes is processed through a desalination plant to make it more acceptable, though it is becoming increasingly scarce. Bores have been attempted, but no projects have come to fruition. In June 2016, the New South Wales State Government announced a $500 million-dollar investment for Broken Hill’s water security. The ‘ocean liner’ is increasingly relying on external life support systems, this time through a metal feeding tube taken from the Murray. A pipeline running 270 km from Wentworth to Broken Hill is planned, promising to ‘future-proof’ the city, forming another engineering band-aid; part of a systemic problem of disregarding environmental limitations. The pipeline proposal has been met with widespread opposition from those aware of crippling cultural and environmental costs. It will likely have further implications for flow management in the Barka (the Darling River), as water previously required to reach the lower catchment to service Broken Hill can respond to the insatiable demands of agricultural and mining industries.\footnote{NSW Government, “Murray to Broken Hill Pipeline”; Neales, “Broken Hill Pipeline a $500m Waste, Rally Told.”} Local Susan Thomas referred to the heated local debate and negotiations with surrounding states about water as ‘the first of the water wars.’\footnote{Thomas, “Interview with Author.”} The Whiteleeds Arid Wetlands conservation and water-recycling project is an
example of private response to water problems, suggesting that like in the past, challenges in Broken Hill may be met by private innovation.\textsuperscript{435}

While Broken Hill’s feted community spirit and resilience have been attributed to life in harsh environmental conditions, the veracity of ‘unity’ and ‘resilience’ will be tested through ongoing climate change.\textsuperscript{436} Jaymie Norris explains that Broken Hill is ‘an active erosional landscape.’\textsuperscript{437} Considering where they sit in the landscape, the green of The Regen provides protection. Without it, lead mitigation and soil stability will be threatened. Climate extremes only accentuate this risk.\textsuperscript{438} The concerns for land stability extend far into Western New South Wales as vast rangelands continue to be overgrazed.\textsuperscript{439} As the 2009 dust storm that we began with attested, a small band around Broken Hill is not enough to hinder continental scale movement, and loss of valuable topsoil. Yet, over confidence in the ability of The Regen to buffer the city can blind locals to the reality of their place on the edge of desert, and to other local cultural, political and public health realities.\textsuperscript{440} Particular notions of resilience and health, and of a ‘fortress’ or ‘ocean liner’ in this sea of sand are being brought into vivid relief as the impacts of climate change and ongoing destructive land uses exacerbate the interaction of social and ecological relations. Attempts to control nature and continue with progress unchecked will dwindle to a dead finish as local ecological realities refuse colonial imaginaries. In the words of Wright:

\textsuperscript{435} McBride and Docking, “Interview with Author.” The wealth of the Radford family that enables this project comes from work with the mining industry.
\textsuperscript{436} Kennedy, Silver, Sin and Sixpenny Ale: A Social History of Broken Hill 1883–1921, 20. See also “Inclusion of a Place in the National Heritage List: Broken Hill.” In this way the early union movements in Broken Hill could be argued as environmental in origin. See Ellem and Shields, “Making the ‘Gibraltar of Unionism’: Union Organising and Peak Union Agency in Broken Hill, 1886–1930”; Reeves et al., “International Journal of Heritage Broken Hill: Rethinking the Significance of the Material Culture and Intangible Heritage of the Australian Labour Movement.”
\textsuperscript{437} Norris, “Interview with Author.”
\textsuperscript{438} Monitoring demonstrates a rise in both the number of days over 40 degrees Celsius and the monthly mean maximum temperature in the Broken Hill region over the past two years. More intense rainfall in La Niña years and more intense drought from higher rates of evaporation in El Niño years are expected. See Hughes, “Climate Change and Australia: Trends, Projections and Impacts”; “Temperatures off the Charts as Australia Turns Deep Purple.”
\textsuperscript{439} Cullenworth, “Interview with Author.” See also Williams and Price, “Impacts of Red Meat Production on Biodiversity in Australia: A Review and Comparison with Alternative Protein Production Industries.”
\textsuperscript{440} After the 2009 dust storms some local community members pointed blame at poor management of The Regen (Jones, “Evolution and Significance of the Regeneration Reserve Heritage Landscape of Broken Hill: History, Values and Significance.”)
O sighing at the blistered door, darkening the evening star,
the dust accuses. Our dream was the wrong dream,
our strength was the wrong strength.
Weary as we are, we must make a new choice,
a choice more difficult than resignation…

**Gathering histories for ecological restoration**

The Regen is a globally relevant pioneering example of responses to the impacts of settler-colonial land use. However, it is not simply an ecologically mechanistic motif or memorial place. It is the production of local passion and industry, global geographical connections, and the agency of the non-human world entwined in complex experiences, emotions and a rising environmental consciousness. Existing formal classifications of The Regen camouflage unresolved aspects of local histories and contemporary uses. These co-present histories have a much to teach about adaptation to changing climates in arid environments, as well as to ethical debates in contemporary ecological restoration practices.

In this arid ecosystem, emergent histories erupt, and in their incompleteness, continue to contest notions of environmental order and control. They come in various guises: materiality of moving sand and constant prodding of environmental extremes; politics of responsibility and (sometimes) generous reciprocity. These histories speak not in chronological order, but in correspondence; interlacing climate and health, pride and belonging, respect and accountability, care and beauty. In conversation, they help to challenge dominant settler narratives, and reframe what restoring local ecologies might mean. Access to these often-silenced histories was made possible by considering historical accounts alongside contemporary processes of history making through qualitative community-based research.

In Broken Hill, there is strength in the arts, education and tourism, as well as world-class geological and engineering data and expertise. New kinds of art that speak from the local

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441 Wright, “Dust.”
ecologies are emerging; those that meditate on time, Indigenous and non-Indigenous relationships with place and environmental change. Susan Thomas, of the Broken Hill Art Exchange, says art ‘recovers the past, for the present, looking to the future’, offering creative means of engaging with multiple versions of the past. Education and cultural awareness opportunities and partnerships between Landcare, local schools and industries are also possible. Ann Rogers, the then principle of Robinson College says that through conservation work students ‘learn to respect the land and their environment…[with a] flow on to also have respect for those in the community.’ These pursuits contrast those that exclude people under the guise of ‘protecting nature’, where responsibility for human and environmental health is evaded and positive encounters inside local ecologies are repressed.

Philosopher Eric Katz warns against ecological restoration constructing ‘The Big Lie’ that he claimed would reinforce human dominion over nature. As these five histories suggest, Katz’ warning should be taken seriously when it comes to this example of the evolution of ecological restoration in Australia. The tale of The Regen can too easily become one of a white male engineering fix, a redemption that facilitates continual destruction of surrounding land while silences of ongoing harm from settlement continue. Yet alternative stories also emerge; those of receptivity to local ecologies; complexity in values, challenges and knowledge types, and, possibilities for different forms of healing to open. Our ability to ‘make good’ environmentally degraded land demands acknowledgement of settler-colonial and industrial histories, and active engagements with these, as we repair vegetation. Alternative futures for the city and the region must engage with the other ‘broken’ relationships from colonial entry. As the quote from Sarah Martin alludes at the beginning of this section, these futures only emerge from a richer understanding of the past. The histories of The Regen demonstrate that early Australian land regeneration was a multifaceted social response embedded within complex and changing, local and global, human-environment relationships. Water scarcity, population decline, and mining


444 Rogers, “Interview with Author.” This speaks to wider conversations about the social aspects of ecological restoration as building ethical communities. For example see Higgs, Nature by Design: People, Natural Process, and Ecological Restoration. 445 “Katz_The_Big_Lie.Pdf,” 232.
industry contingencies make the long-term future of Broken Hill fragile.\textsuperscript{446} ‘We must prepare the land for a difficult sowing’, wrote Wright, ‘a long and hazardous growth of a [different] strange bread.’\textsuperscript{447}

\textsuperscript{446} The mining prospects, population, and climate extremes are of particular concern. See “Population Decline for Broken Hill”; Green, “The Last Drop of Water in Broken Hill.”

\textsuperscript{447} Wright, “Dust.”
Histories of The Regen illustrate the enduring legacies of multiple relationships with place. Restoration activities were found to at once address and silence environmental and social harms. Questions arise regarding mining company responsibility and accountability; shrouded by a strong sense of place and mining heritage identity. The next section considers absence of government control of mining impacts, and the ways that industry discourses corrupt public perception and acceptance of ecological decline. It concludes with reflections on participatory action research with the Australian Association of Bush Regenerators and interested parties, which focused on celebrating the story of The Regen.

**Legacy landscapes and environmental justice**

Mineral exploration and mining processes are central to the expansion and extraction mentality of frontier settler culture in Australia. They contribute to continent-wide environmental despoilation and contamination. Australia’s pro-development ideology is underpinned by cultural assumptions that reinforce hegemonic discourses about progress and growth. Anthropologist David Trigger describes large-scale mining as being taken for granted within the context of powerful narratives of discovery and improvement in settler Australia; those of ‘making the Australian landscape productive, civilized and familiar.’ In this context, mining is given high moral validity and the industry perspectives become more powerful than ‘any fears about the destructiveness of mining to the natural environment’, let alone to human health. Exploration is seen as domestication of an untamed and unfamiliar place; a blank slate void of any temporal history. Anthropologist Richard Howitt explains how corporate narratives silence multilayered local ones, through ‘project-centred narrative[s] of regional development’

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448 Trigger, “Mining, Landscape and the Culture of Development in Australia,” 166.
449 Trigger, 163.
that ‘subsume everything into the story of the mine.’ Such discourses overpower alternative place stories and meanings, but these continue to persist.

For ecological restoration in mining contexts, timescales of human memory, ecological processes and geological time intersect. Attempts to ameliorate the impacts of mining activities and recreate a favourable ‘landscape’ work on different playing fields to both mineral deposition and background erosion. Trigger states:

[I]t is the very vastness and naturalness of the geological timescale by which mining professionals measure and assess landscape that seemingly contributes to their apparent lack of empathy with views stressing its cultural or aesthetic meaning for humans…for those who study the history of the landscape over enormously long periods of time, assertions that its present forms be regarded with reverence (either in terms of ‘wilderness value’ of Aboriginal significance) may appear incommensurate with one’s professional world-view.

The geological world frames the ‘natural’, Trigger explains: ‘it is arguably their highly technical knowledge of the robust geological history of landforms that leads many industry personnel to regard the environmental effects of mining as fully compatible with “natural processes”.’

The Australian Constitution, drafted in the late 1890s, does not include any references to protection of the environment. Throughout the last century, the High Court has progressively interpreted the Constitution in such a manner that the Commonwealth has been able to assume a range of legislative environmental protection. In 1999, the Commonwealth government passed an overarching piece of legislation—the Environment Protection and Biodiversity Conservation Act 1999. This Act provides some controls on mine rehabilitation through Commonwealth environmental legislation when it relates specifically to protected flora, fauna, ecological communities and heritage places. From a legal standpoint, contemporary Commonwealth environmental policy is not equipped to manage legacy issues. As mining policy analyst Mia Pepper and others have assessed:

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452 Trigger, 170. See also McEachern, “Mining Meaning from the Rhetoric of Nature — Australian Mining Companies and Their Attitudes to the Environment at Home and Abroad,” 56.
Every state and territory seems to have different views about mining legacies, different solutions, funding arrangements, prioritisation of the issues and even different government agencies that deal with mining legacy issues. While some states and territories have recently developed policies on legacy mines and different strategies to raise funds to begin the task of rehabilitating sites; a national hub and strategy seems no closer than in 2003.453

In Australia, State and Territory government authorities are responsible for monitoring and overseeing mine permits, and regulation and rehabilitation requirements. There is no national framework or best practice code that governs mine rehabilitation, despite efforts to outline best-practice scenarios.454 The extent of overseeing and policing rehabilitation practices according to lease requirements varies greatly. In only some cases, Commonwealth legislation is involved through conditions of approval, yet current requirements are often not articulated in clear frameworks. Standards for rehabilitation are on a case-by-case basis. Requirements differ according to the location, State and Territory level legislation and to the party politics of the day. In an Address to the Minerals Council of Australia in 2003, the then chairman of the productivity commission stated that legislation was ‘characterised by duplication and lack of co-ordination’, with ‘a lack of consistency between different jurisdictions’, that it relied ‘on outmoded regulatory concepts’ and contained ‘excessive scope for the exercise of ministerial or administrative discretion.’455

Self-regulation allows the mining industry to set its own standards while promulgating a feel-good message that suggests to the general public that they are above external criticism. There are no overseeing bodies nor Federal government control mechanisms for assessing success. As environmental lawyer Rob White articulates:

[T]he evidence so far is that what is currently in place is woefully inadequate to the task of either taking precaution or rectifying the harm that does occur, even where mining corporations have instituted explicit environmental management and rehabilitation schemes.456

454 For example, see: Commonwealth of Australia, “Mine Rehabilitation: Leading Practice Sustainable Development Program for the Mining Industry,” 2.
In their place, mining companies seek a ‘social license to operate’ by gaining trust with local communities. As geographers Jason Prno and D. Scott Slocombe explain, ‘[F]ull legal compliance with state environmental regulations has thus become an increasingly insufficient means of satisfying society’s expectations with regard to mining issues.’\(^{457}\) A ‘social license’ helps to ensure the viability of the sector, is developed specifically for this purpose, and is maintained only while it is financially beneficial for a company to pursue mining in the specific region.\(^{458}\) Whether or not national governance would result in better outcomes than State and Territory-based regulation is unclear. However, the inconsistencies between policies and the troubling trend for industry-led, rather than government-led regulation, require attention.\(^{459}\)

The Australian mining industry is saturated by a systemic culture of selling off environmental and health responsibilities and handballing legacy issues to the public and local government. Financial bonds are radically insufficient. The global experience is that ‘bonds have often been set at levels that are inadequate to fund the necessary rehabilitation when a mining site is abandoned by the responsible company.’\(^{460}\) The reasons for mining closure are geotechnical, geological, economic, regulatory, or due to community pressure, and the majority of mines close prematurely or suddenly driven by market forces.\(^{461}\) Often, mines are ‘mothballed’ for ‘care and maintenance’, allowing time for technological improvement. This puts the mine into a temporary freeze that voids closure and rehabilitation actions. Mothballing is either continued in perpetuity, or until the company files for bankruptcy. In other cases, mines are sold for a small amount, allowing the responsible companies to avoid or drastically reduce clean-up

\(^{457}\)Prno and Slocombe, “Exploring the Origins of ‘Social License to Operate’ in the Mining Sector: Perspectives from Governance and Sustainability Theories,” 346.


\(^{459}\)For example, the Chairman described how ‘in 1996 the Industry launched its Code for Environmental Management. Within three years, 44 minerals companies, representing over 300 operations (approximately 85 per cent of Australian production) had become signatories.’ Banks, “An Address to the Minerals Council of Australia’s Annual Industry Seminar’, Old Parliament House,” 9.

\(^{460}\)Davis, “Environmental Rehabilitation and Mine Closure.” Estimating rehabilitation bonds is a long and complex process. Calculations have to account for earthworks, capping and sealing against Acid Mine Drainage (AMD), water contamination issues, runoff, tailings dams, topsoil replacement, fertilising the soil with gypsum, and decommissioning fuel stations on site amongst other factors.

expenses. At present, there are in excess of 50 000 abandoned mines in Australia. The ongoing impact of mines once they have ceased operation is given little attention. ‘[T]he resulting abandoned mine and mining communities’, state environmental consultants Corinne Unger and Ashley Van Krieken, ‘provide memories of times past, leaving a scar on the local environment.’ As the study in Broken Hill outlines, such scars of the past are also written into human bodies.

White points out how ‘[D]etrimental environmental impacts associated with mining are intrinsic to mining itself’, and that ‘mining inevitably involves a trade-off between ecological considerations and economic gain.’ He uses the term ‘contaminated communities’ to describe the toxic legacies that result in ‘detrimental consequences for local habitats and human residents.’ In Broken Hill, lead impacts on yet another generation as it migrates from the bones of pregnant women into their growing babies. The attribution of responsibility to ‘legacy lead’ from past operations is presented as a way out of blame. In this way, industry partners are readily absconding from their responsibilities for past acts. The environmental justice framework partly addresses industry-led myths by demanding that ‘workers residents and key stakeholders be included as participants in data collection processes, and that their specific vulnerabilities as victims or potential victims of environmental harm be prioritised for analysis and action.’ By taking this approach, the concerns of the local community can be acknowledged.

Ecological restoration/regeneration practices can decrease environmental damage and public health risks resulting from residual contaminated land, but the extent and quality of post-mining landscape rehabilitation varies greatly. Best-practice site remediation includes activities such as local seed banking and topsoil conservation, reinstating water flows and erosion control. The immense extent of geomorphological and chemical alterations to substrates adds significant

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462 For example, mining giant Rio Tinto sold the Blair Athol mine to company TerraCom for $1 in order to sidestep the scale of remediation costs. See McCutcheon, “Company given Millions in ‘Surplus’ Enviro Funding after Buying Blair Athol Coal Mine for $1.”
463 Unger, “What Should We Do with Australia’s 50,000 Abandoned Mines?”
466 White, 51.
467 For example see: Hu and Hernandez-Avila, “Lead, Bones, Women, and Pregnancy—The Poison Within?”
468 This is evident in Broken Hill and also arises in the following two place studies Soil and Sand.
challenges to ecological restoration efforts. Where restoration has not occurred, increased erosion and dissemination of dust can contaminate surrounding areas.\textsuperscript{470} Today there is a greater need for commitment to post mining rehabilitation in order to gain a mining licence. However, unsupported by adequate bonds and enforcement these commitments remain weak.

The debates about historical baselines for ecological restoration are amplified in mining contexts. On the ecological end of the spectrum, the Society for Ecological Restoration’s \textit{National Standards for the practice of Ecological Restoration in Australia} (2016) provides a recent framework for aiming for the highest quality ecological restoration.\textsuperscript{471} Yet many factors influence the kind of restoration that is appropriate. Ecologists David Doley and Patrick Audit have argued for the acceptance and adoption of novel ecosystems when guiding mine site restoration as ‘[T]he nature and extent of environmental disturbance associated with mining commonly entails completely new and challenging combinations of climate, lithology and landform.’\textsuperscript{472} The availability of water for restoration projects also needs to be factored in, given that many mines are situated in sites of erratic rainfall.\textsuperscript{473} Where rehabilitation practices are relied on for retaining toxic mine waste, health concerns often overpower ecological considerations. Contemporary mining rehabilitation and hopes for best-practice ecological restoration in mining contexts have much to learn from the study of historical operations, arrangements and legacies. A cultural snapshot of practices in the 1930s in Broken Hill and the ongoing stories of the land surrounding the city open up new conversations about restoration and responsibility, and about the power of alternative histories that challenge hegemonic pro-development discourses.

In 2016, environmental scientists Louise Kristensen and Mark Taylor published a paper called \textit{Unravelling a ‘miner’s myth’ that environmental contamination in mining towns is naturally occurring}. This paper highlights that in many cases across the world ‘industrial operators concoct ‘myths’’ to ‘distract the public and the authorities away from understanding and

\textsuperscript{470} Courtney, “Mine Tailings Composition in a Historic Site: Implications for Ecological Restoration.”

\textsuperscript{471} SERA, “National Standards for the Practice of Ecological Restoration in Australia.” While the highest standard is arguably unattainable in such altered environments, this document does important work of encouraging standards to be raised and gives categories that can be measured against for degrees of success.

\textsuperscript{472} Doley and Audet, “Adopting Novel Ecosystems as Suitable Rehabilitation Alternatives for Former Mine Sites,” 1.

\textsuperscript{473} Audet et al., “Site-Specific Climate Analysis Elucidates Revegetation Challenges for Post-Mining Landscapes in Eastern Australia.”
determining the true source and cause of environmental contamination.\textsuperscript{474} It works through and discredits, the four ‘myths’ that explain toxicity, particularly lead poisoning, which excuse the focus on current mining practice and associated responsibility. These are: natural background weathering and erosion; legacy issues from historic operations; an argument for transfer to human bodies being limited by low bioavailability, and, other lead sources such as lead paint, petrol and old batteries. Importantly, these are not just myths that are pushed by industry, but they have made their way into public consciousness, shaped public policy and been taken as truths by government departments. These myths manage to make the community complicit in the problem by way of being connected to the history of Broken Hill, by benefitting from the wealth generated in the past, and also by choice of ‘lifestyle.’ Another powerful element of accepting the risks associated with mining legacies comes from being proud of one’s history.

In Queenstown, north-western Tasmania, the proposed ecological restoration of a mining landscape was resisted by locals. Queenstown, Tasmanian writer Pete Hay describes, is an ‘archetypal turn-of-century mining town’, through which runs ‘the grey-sludge river, a conduit for acid mine drainage that is likely to bedevil the downstream environment for decades to come.’ Situated within today’s Tasmanian ‘west coast wilderness’, its political and cultural predilections as a mining town lay in stark contrast to the preservationist green movement that has dominated the area since the 1970s. It is thought in part because of this antagonism that locals hold a strong and proud view of their industrial history that thrived for over 100 years after its inception in the 1890s. More than a century of mining and smelting operations put continual pressure on the surrounding hills and what has remained are the iconic pale orange hues of the ‘lunar landscape’ that Hay refers to as ‘nationally infamous as the epitome of an era of mining characterised by gross environmental irresponsibility.’\textsuperscript{475} Emily Bullock describes Queenstown as ‘a marginal place that is constituted in and through a series of desecrations.’\textsuperscript{476}

\textsuperscript{474} Kristensen and Taylor, “Unravelling a ‘Miner’s Myth’ That Environmental Contamination in Mining Towns Is Naturally Occurring.”
\textsuperscript{475} Hay, “‘These Blarsted Hills’: Affectionate Regard for a Despoilated Landscape,” 1. For a history of the Queenstown mining industry see Blainey, The Peaks of Mt Kyell.
\textsuperscript{476} Bullock, “Around the Bend: The Curious Power of the Hills around Queenstown, Tasmania,” 86.
In 1993, the mine was scheduled to close and was required by law to conduct extensive rehabilitation works including a revegetation program. Contra to Broken Hill, in Queenstown the local community actively ‘mobilised in opposition to “the reveg”.’\textsuperscript{477} Queenstown’s rivers run orange and the effects of the ecological toxicity spread through time and space. The King and Queen rivers far from Queenstown carry heavy arsenic loads. Evidently, a strong sense of place does not necessarily correlate with pro-environmental values; neither does environmental philosopher Glenn Albrecht’s notion of ‘solastalgia’–loss of a sense of place–always relate to a move from ecological health to ecological destruction.\textsuperscript{478} Externally forced ideas of ‘healing’ landscape can conflict with identity and pride in local histories.

Hay’s work demonstrates a picture of Queenstowners not necessarily being anti-nature, but instead having an extremely powerful sense of place that was connected to those bare hills. The landscape that surrounded their town provided relief from the vast wilds of the surrounding World Heritage area and differentiated it from other historic mining towns that were seen as being taken over again by the forest. It was not change that people were resisting, but rather, the agency and pace of it. Some community members expressed that ‘hated the glare of the hills when they were starkly white – but feel great affection for the more subtly, more complexly coloured hills of the present day.’\textsuperscript{479} Hay found fondness for the slow colonisation of the hills by microorganisms and some small vegetation; the passive restoration carried out ‘by nature.’\textsuperscript{480} Community members opposed active interventionist strategies, preferring to ‘let nature take its course.’\textsuperscript{481}

Legacy landscapes hold important stories of the past, even when they are stories of ecological degradation. In recent years, Queenstown has traded on its uniqueness as a carnivalesque absurdity. Artists have flocked to its slopes to be inspired by the aesthetic starkness and historical discomforts that remain.\textsuperscript{482} As Hay points out, ‘to accept and trade on such an image is to have the dignity of the community continually under challenge.’\textsuperscript{483} One aspect of this kind

\textsuperscript{477} Hay, “These Blarsted Hills’: Affectionate Regard for a Despoilated Landscape,” 8.
\textsuperscript{478} Albrecht, “Solastalgia: A New Concept in Health and Identity.”
\textsuperscript{479} Hay, “These Blarsted Hills’: Affectionate Regard for a Despoilated Landscape,” 9.
\textsuperscript{480} Hay, 9.
\textsuperscript{481} Hay, 10.
\textsuperscript{482} For example, see: \url{https://www.theunconformity.com.au/}, accessed 09 June 2019.
\textsuperscript{483} Hay, “These Blarsted Hills’: Affectionate Regard for a Despoilated Landscape,” 10.
of eco-destructivist tourism ‘whereby the visitor perversely looks upon the beauty of ecological
destruction’, is its potential to inform different environmental relationships. 484 As one
participant in Hay’s study remarked: ‘[W]e could hold it [the bare hills] up as a monument to
what can happen, and don’t let it happen again. A scar. A reminder of what we need to avoid.’485
All people and places are subjects of their entire ancestry, not just the bits that we like to tell.
Geologist José López-García and others ask:

[Should abandoned mine sites be eligible for some official protection under the umbrella of
goecoservation? Providing they have enough educational and scientific value, the answer is
affirmative, and we suggest that they should be granted protection at the level of geoheritage
sites.486

Retaining a degraded site and allowing it to slowly transition between states may act as an
educational tool, but this perspective needs always to be kept in check by public health and
environmental justice concerns.

Conflict between mine site heritage and restoration attempts are likely to continually arise.
Ecological restoration can respond to past ecological wounds but are unlikely to succeed if
approached out of kilter with local meaning and histories. The heritage-listed mine tailings in
The Regen in Broken Hill seem less absurd when considered from this perspective. Human
histories of the more recent human past are slowly being considered as legitimate aspects of
cultural history. This move is breaking down the barriers between heritage landscape
conservation based on ‘nature’ and stories of heritage based on use values. The Regen combines
both at once. Its enduring meaning to the community is possibly because it arose along with the
evolution of the industry. Restoration, when approached within the full remit of a place’s
history, strengthens attachment to place for plural reasons rather than working to create conflict.

The damage that restoration work attends to goes beyond spatial and temporal boundaries.
Across the world there are fabulous examples where old mine sites have become contemporary
sites of environmental education.487 Borrowing Australian philosopher Thom van Dooren’s

485 Hay, “‘These Blasted Hills’: Affectionate Regard for a Despoiled Landscape,” 10.
486 López-García et al., “Scientific, Educational, and Environmental Considerations Regarding Mine Sites and Geoheritage: A
Perspective from SE Spain,” 267.
words on extinction: ‘When the dust settles, something will likely recover, but it will be something very different.’ To avoid the mistakes of the past, and prepare for different futures, we must remember local stories. A wider view of history informs the need for urgent social and political work that addresses ongoing cultures of violence and deeper wounds in local place.

**Fighting for Barka**

Wider problems of water supply continue to plague the Broken Hill region. The 2019 water allocation debates within the Murray-Darling basin influence regional concerns that have been identified within this study. The growth of Broken Hill required immense and expensive water provisions for both industry and the urban public. As the report *Resilience and water security in two outback cities* outlines, interactions of drought, demand and decline repeated in cycles. Moments of major water crisis (particularly in the 1940s, 1950s, 2002-2003) and again in 2019, are propped up repeatedly by new investments, new infrastructure and new promises. However the façade of resilience can only be retained for so long.

In December 1991, a toxic algal bloom extended across 1,200 kilometres of the Darling River. In reflecting on this, Muir explained: ‘[P]eople all over the country seemed to evoke a collective shame, asking in the plural, how did we let things come to this?’ He notes the evocation of restoration as a hopeful narrative by politicians: ‘Prime Minister Paul Keating gave a speech in which he promised to restore the health of the Murray-Darling, replacing ‘a matter of national shame with a cause for hope and pride.’ In the decades that followed, Australia’s southern states embarked on developing a plan for the Murray-Darling Basin that has been fouled by policy failure and corruption.

The failures of this program are wrapped up in ideas of ‘nature’, of ‘resource’, of ‘ecology’, of ‘progress’. Since 2004, there has been a see-sawing between the two main strategies for water management within the Murray-Darling Basin Plan: infrastructure investment and buy-backs. The 2008-2012 Murray-Darling buy-back scheme was known as *Restoring the Balance*. In

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2014, infrastructure upgrades were proposed to save 3, 200 billion litres of water. But, as researchers David Adamson and Adam Loch assert: ‘this will expose farmers to debt and drought, while leaving the environment no better off.’ They point out that ‘capital investments (which are less flexible than water trading) can encourage inflexible farming systems that could be caught out by future water scarcity.’

As geographer Wayne Atkinson explains for the Murray Darling River, management needs to be engaged with, and responsive to, a dynamic ecology.

In June 2015, after eighteen years of legal processes, the Barkandji people were successful in the largest native title claim in New South Wales. Within the 128, 000 square kilometres of land, their rights are recognised in settler-law to carry out certain activities ‘according to traditional law and customs.’ Barkandji means ‘people of the river’, (the Barka) and to them, water is life. Recognition of native title without rights to control or be consulted about and make decisions about their water, makes tenuous the practical abilities of their rights. This became quickly evident as the health of the river continued to decline. In 2014 and again in 2017, the Menindee Lakes were drained in order to meet water-allocations downstream. Effects have been catastrophic to local culture, community, business, and ecological health. In May 2016, both Indigenous and non-Indigenous people from Wilcannia and Menindee went to Canberra to lobby for changes to water management of the river but little changed. The true impacts of long-term mismanagement are now surfacing. In 2019, a series of mass native-fish deaths occurred. Barkandji leader Badger Bates expressed at a 2018 rally that ‘the NSW government-funded pipeline using $500 million of taxpayers’ money, as a stark symbol of everything that is wrong with the way the Darling and Murray rivers are being treated.’

The troubles of native title recognition and access and environmental decline are linked through persisting hegemonic narratives that deny Aboriginal sovereignty and frame environment as

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492 Adamson and Loch, “The Latest Murray-Darling Plan Could Leave Farmers High and Dry,” 1, 2.
493 Atkinson, “Yorta Yorta Occupation and the Search of Common Ground.”
494 The draw-out timeframe was condemned by Justice Jayne Jagot. See Tan, “Largest Native Title Claim in NSW History Finalised after 18 Year Legal Struggle.”
495 Tan, 1.
496 Volkofsky, “Barkindji People Say the Darling River Is Dying and Culture Is Suffering.”
497 Cockburn, “Menindee Fish Kill Leaves Devastated Town Wondering If Its Future Is Gone Too.” Baumgartner and Finlayson, “A Good Plan to Help Darling River Fish Recover Exists, so Let’s Get on with It A Good Plan to Help Darling River Fish Recover Exists, so Let’s Get on with It.”
resource. A series of disqualifying strategies underpin native title law, with ‘[O]nly those practices that could be traced, uninterrupted, back to pre-colonial times [being] recognised.’

Satisfying the requirements of native title for ‘unbroken continuity’ is more difficult in the state of New South Wales. ‘Indigenous people’, writes Ford, ‘could lose their connection with their land merely by ceasing to be sufficiently connected to it’, where ‘displacement, assimilation, even modernization could destroy the fragile bond of indigenous people to their land.’

Ford argues that ‘[A]ccording to the court, these were fragile rights indeed’, and that ‘Crown grants of state or federal legislation could extinguish native title by granting a superior right–freehold or unqualified leasehold property.’ A precedent was set in 2002, when high court case Wilson v Anderson determined that native title rights were extinguished by historical leases. This further strained native title possibilities in a region already covered by majority freehold tenure.

Where Barkindji people have their land, they are ‘still denied much of their water.’ ‘Cultural flows’ is a phrase that participates in negotiations and pitches Indigenous people as one stakeholder amongst the many. A 2018 paper by Lana Hartwig, Sue Jackson and Natalie Osborne considers Aboriginal water access and trading rights and critiques the national water policy, native title law, NSW water legislation and NSW water allocation planning. Hartwig and others point out the ‘essentialist misrecognition’ that is being carried out when Aboriginal people’s water rights and interests are categorised differently to other stakeholders, but only within narrow and essentialised state-mediated ideas of Indigeneity. They posit that a ‘state failure to recognize and protect Barkandji native title rights in its water resource regimes challenges the legitimacy and justice of contemporary water governance in Australia.’

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499 Tan, “Largest Native Title Claim in NSW History Finalised after 18 Year Legal Struggle,” 1.
501 Ford, Settler Sovereignty: Jurisdiction and Indigenous People in America and Australia, 207.
502 Ford, 207.
505 Weir, Murray River Country: An Ecological Dialogue with Traditional Owners. Especially they use ‘cultural flows’ by analogy with ‘environmental flows’.
507 Hartwig, Jackson, and Osborne, 1, 19.
work highlights the ineffectiveness of policy and legal frameworks to adequately recognise Aboriginal peoples’ rights and lore that are incommensurable with a Western neoliberal system. Water diversion, overallocation and trading rights in the Murray-Darling River system fail to rectify political processes of discrimination and continue to degrade ecological and cultural systems and lives.

Environmental humanities scholar Jessica Weir’s 2009 book Murray River Country: An Ecological Dialogue with Traditional Owners provides fresh critical perspectives on Australia’s water crisis. Weir’s work highlights how dominant national identities are out of touch with ecological realities. Working with traditional owners, Weir articulates opportunities to reframe discourse and practice, to recognise that our economy and our lives are dependent on river health. Wholeness and health of people and of river systems cannot be separated. Writing about Ngemba traditional owner Phil Sullivan’s values for water, Muir writes: ‘without respect for the river and respect for the gift, without respect for each other, the story is diminished and so it the potential for life to flourish. If the story is lost so is the river.’ Such values run alongside Western frameworks, are no less true, and provide moral guidance to social and environmental action. As Anthropologist Elizabeth Povinelli states: ‘[T]he power of a particular form of communication to commensurate morally and epistemologically divergent social groups lies at the heart of liberal hopes for a nonviolent democratic form of governmentality.’

In July 2017, an investigative journalism piece was broadcast on ABC TV’s Four Corners program, entitled Pumped: Who’s Benefitting from the Billions Spent on the Murray-Darling? This piece suggested billions of dollars of water were being stolen for irrigation by upstream of the Menindee Lakes by cotton growers, and that a systemic culture of misconduct existed within government and agricultural bodies. Criminal investigations and a royal commission into the Murray-Darling Basin ensued. Individual investigations continue, but the royal commission report provides insight into the broken cogs in the system. It found not a lack in the legislative framework, but rather, in ‘the operational capacity of States to monitor, and cultural willingness

508 ‘Lore’ is the term used to differentiate Indigenous lore from Western law.
510 Muir, The Broken Promise of Agricultural Progress: An Environmental History, 177.
to pursue, enforcement outcomes. The commissioner also considered the ongoing problems with Indigenous recognition, stating:

[T]here are significant ontological differences between Aboriginal and non-Aboriginal cultures, which the Commissioner understands to be profoundly relevant to reforming the management of any aspect of land, water and natural resources in Australia in a way that recognizes and provides for Aboriginal interests, values and cultural identity.

This recognition is a first step, but systemic changes are necessary. One area of interest for ecological restoration is compensation funding. Native-title holders have the right to compensation where activities that affect their land or waters impact their native title, including funds to cover, amongst other activities, rehabilitation or monitoring. Though, as Hartwig and others point out, ‘claiming and payment of compensation is still an emerging aspect of the NTA (Native Title Act) regime.

The state of water rights in this region reinforces that ecological realities are out of touch with practices of ‘production’ that continue and that there is an ongoing failure of policy to address ecological and cultural violence. Not being seen to be property owners, the only way that Indigenous people can get access to water for their land rights is by entering a market that is complicit with the degradation of their country. Trading water rights between unsustainable land users will not restore the ecological system. The state of the Barka is evidence that settler-colonial imaginaries and neoliberal practices that support industrial agriculture and profit at all costs are ongoing. Restoration practices that work in isolated regions may mask certain damages and provide many positive ecological and social values, yet systemic social and cultural reformation is needed to address ecological and social harms.

This study opened with the dust coming from the west, mobilised at a vast scale by inappropriate ideas and practices in arid Australia. It ends with looking east, to the rivers that continue to be manipulated for the wealth of a select few. Evidently wider conversations about ‘resources’, identity and place are necessary.

Walker, 471.
Celebrating The Regen

What follows is an example of how layered local histories, participatory practices and critical reflections can lead to enhanced social and ecological outcomes. In February-March 2017, I returned to Broken Hill to assist in a project co-ordinated in partnership with the Australian Association of Bush Regenerators (AABR) and led by restoration ecologist and AABR president Tein Macdonald. AABR is an active bush regeneration group in Australia with over 30 years of experience and a professional, active and interested membership. AABR wanted to formally recognise the contribution of the Morrices and The Regen in mainstream restoration consciousness. First, they wanted to assess The Regen for its ecological ‘quality’ and restoration credentials against the *National Standards for Ecological Restoration*. Second, they wanted to connect with the local Council and community to generate public events and associated benefits connected to an ecological restoration award, to be presented to Albert Morris and The Regen project posthumously. The AABR team believed in the importance of local voices in the message being sent about The Regen in its global significance to ecological restoration. Aware of my work and contacts in Broken Hill, Tein invited me to help facilitate this process.

Together with AABR, we worked to bring disparate information and individuals together in order to honour the work and the history, but also to support The Regen and strengthen its presence in the consciousness and culture of Broken Hill. The activities culminated in formal events and the awarding of the inaugural ‘Albert Morris Ecological Restoration Award’ presented in August 2017 (coinciding with the 80th anniversary of the beginning of the project).

A number of things had changed since I had conducted my research on Broken Hill the previous year. The first time I approached, the country was bursting with new life after rain. Since this visit: the Environmental Protection Agency had worked on stabilising the tailings dams in the southern end of the Regen; Broken Hill Landcare had acquired some new and passionate members and a part time Landcare co-ordinator, and, sadly, The Barrier Field Naturalists Club, in their 96th year, had filed for closure.

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516 SERA, “National Standards for the Practice of Ecological Restoration in Australia.”
In the four days I had in Broken Hill I sought to engage histories for ecological restoration. I worked to create an environment for discourse between ‘outsider’ ecologists, Indigenous community representatives, formal Council managers, interested members of the public, artists and gardeners. The aim was to bring local community members and those in governance roles together, facilitate discussion, and consolidate follow up steps for action to assist the future of The Regen. Conversations over four days of field trips and a workshop meandered through many relevant musings on The Regen: its place in the ecological consciousness in Australia, the concerns with assessing old projects from contemporary perspectives, and the need to look beyond disciplinary boundaries in order to understand both historical and contemporary relevance to the local community, and the politics of the practice.

Community-based conservation projects that aim for both social and environmental outcomes are a cornerstone of community development programs and feature strongly in international development policies. The social outcomes and experience in projects that are intended to be community-based or build community capacity are crucial to the ongoing development of projects and the community itself. In accordance with this, I adopted the principles of ‘Participatory Action Research’ (PAR). The socially inclusive iterative process of goal setting is akin to the adaptive management cycle, whereby lessons from the past are used to inform future program development to enhance desired outcomes.


Emerging from place-based work such as social work, health and community development, PAR and makes time to reflect on individual, communal and broader change as a foundation for individual and collective decision-making. It is based on a set of commitments that challenge traditional subject-object principles of social research in order to co-generate knowledge through cycles of collaborative planning, action, observation and evaluation actions. PAR has been employed to encourage community engagement with science-based management, and has been demonstrated to be a useful tool in cross-cultural learning, by making room for plural values to be considered (Metaggart, “Principles for Participatory Action Research”; Mordock and Krasny, “Participatory Action Research: A Theoretical and Practical Framework for Environmental Education.”)


518 Emerging from place-based work such as social work, health and community development, PAR and makes time to reflect on individual, communal and broader change as a foundation for individual and collective decision-making. It is based on a set of commitments that challenge traditional subject-object principles of social research in order to co-generate knowledge through cycles of collaborative planning, action, observation and evaluation actions. PAR has been employed to encourage community engagement with science-based management, and has been demonstrated to be a useful tool in cross-cultural learning, by making room for plural values to be considered (Metaggart, “Principles for Participatory Action Research”; Mordock and Krasny, “Participatory Action Research: A Theoretical and Practical Framework for Environmental Education.”)
**The Regen Forum**

A workshop was conducted at the Council chamber on 2 March 2017 (fig 13). Key activities and outcomes are described below.

**Key words elicitation**

After a round table introduction, we invited participants to write down three or more words that came to mind when they thought of The Regen on post-it notes (fig 14). Very little direction was given, in order to allow the responses to be as broad and open as possible. Participants were told that words would be collected at the end but that responses could remain anonymous, encouraging them to write as they felt without worry about how responses came across. Words were collected and as read out, were written onto a whiteboard under emerging themes. Repeated words were only written up once, and similar words were collated by meaning (for example ‘fauna’ and ‘native animals’). Responses were anonymous unless people wanted to briefly speak to the meaning of their contribution. The exercise triggered interesting discussion and a sharing atmosphere in the room. Clear distinctions became apparent between themes that needed to form part of the workshop. Each theme was collaboratively considered and grouped for activities for the remainder of the day. Finally, participants were invited to contribute any aspects of The Regen that had not emerged within this activity that they felt needed to be addressed.

**Group mind mapping & discussion**

It became clear that contributions fell into categories of ‘past’, ‘present’, ‘actions’ (in short, medium and long term as self-selected by the group), and (associated with ‘actions’) ‘potential

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520 Participants included: **Facilitators**: Lilian Pearce (PhD candidate, Fenner School, ANU), Dr Tein McDonald (President, AABR) **Attendees**: Libby Guest (BHCC), Dilkie Wanni (BHCC), Darrell Ford (BHCC), Martha Gouniai (Coordinator, Western Landcare NSW), Wayne Lovis (Chair, Landcare), Ann Evers (Landcare), Lindy Molesworth (Landcare), Sandra Walden (Barrier Field Naturalists Club ctee member), June Baetge (BHFNC), Sarah Martin (OEH), Jodie Edge (OEH), Jaymie Norris (OEH), Paul Adcock (BH U3A), Susan Thomas (BH Art Exchange), Bruce Green (BHAE), Miles Clothier (filmmaker), Greg Curran (Landcare), Fran McKinnon (National Trust), Corey Spiteri (BH Visitor Centre), Lilian Pearce (ANU PhD candidate), Tein McDonald (AABR pres), Scott Meier (AABR ctee), Virginia Bear (AABR video), Louise Brodie (AABR membership officer), Jane Gye (AABR sec). **Apologies**: Peter Ardill (AABR), David Jones (Deakin uni), Martin Driver (Aust Network Plant Conservation), Liz Vines (BHCC), Badger Bates (Baarkindji NTG Aboriginal Corp.), Claire Hickson (OEH). With participants’ permission, the workshop was filmed by local volunteers so as to form part of an archive associated with The Regen.
partners’ (fig 15–18). These were developed to guide further management (table 1). In the short term, the Council led the convening of a management committee for The Regen areas to follow up on these needs.

Figure 13: The Regen Forum in action: Regen Forum March 2017. Photo: Virginia Bear.

Figure 14: Example of notes from key-word elicitation exercise: Regen Forum March 2017. Source: author.
Figure 15: Themes arising from key-word elicitation exercise: Regen Forum March 2017. Source: author.
List of Considerations (Past)

Areas for consideration
Aboriginal access to area
Aboriginal engagement with Broken Hill area
Aboriginal heritage as part of story
Context in broader landscape
Context in complex system
Grazing connections
Relationships between commerce, council & community
Responsibility & commitment of industry
Soil conservation & ‘dust storm’/‘sand drift’
language

Areas for action
Financial contributions
Heritage
Management plans
Mining
Mining leases
Oral histories
Storytelling

Figure 16: ‘Past’ considerations from collaborative workshop activity: Regen Forum March 2017. Source: author.

List of Considerations (Present)

‘Feral’ animal management (rabbits & goats)
Education (particularly about why people are excluded)
Fauna
Fencing (finances, grants, animal access & mobility)
Fire (cultural aspects, asset, local ecology/culture?)
People (access in selected places)
Removal of non-native species

Figure 17: ‘Present’ considerations from collaborative workshop activity: Regen Forum March 2017. Source: author.
**List of Potential Partners**

Barrier Field Naturalists Club  
Broken Hill Art Exchange  
Bush Walkers  
Community/social services  
Conservation NGOs  
Landcare  
Local Land Services  
Mining companies (particularly Perilya, CBH, Rio Tinto)  
NSW National Parks & Wildlife  
NSW Office of Environment & Heritage  
Pony Club  
Schools/TAFE, Education grants  
Sports Clubs (including bikes)  
Universities (eg. UNSW, University of Sydney)

Figure 18: List of potential partners developed in collaborative workshop activity: Regen Forum March 2017. Source: author.

**Table 1: Short, medium- and long-term management actions developed in collaborative workshop activity: Regen Forum March 2017. Source: author.**

<table>
<thead>
<tr>
<th>Actions</th>
<th>Short term</th>
<th>Medium term</th>
<th>Long term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Story</td>
<td>Refine story &amp; sharing</td>
<td>Promote &amp; refine</td>
<td>Promote &amp; refine</td>
</tr>
<tr>
<td>Art</td>
<td>Interactions, workshops, display</td>
<td>Mural</td>
<td>Explore ongoing opportunities</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td>Kids involvement, school teaching materials, school participation.</td>
<td>Include in curriculum and activities</td>
<td><strong>Explore ongoing opportunities</strong></td>
</tr>
<tr>
<td>Interpretation</td>
<td>Brochure, media, displays in situ</td>
<td>Film</td>
<td>Explore ongoing opportunities</td>
</tr>
<tr>
<td>Stakeholders</td>
<td>Initial communication &amp; meeting</td>
<td>Group formed, commitment to management plan &amp; governance arrangement</td>
<td>Broader stakeholder contact</td>
</tr>
<tr>
<td>Management</td>
<td>Path &amp; fencing work</td>
<td>Compile new management plan</td>
<td>Management partnerships</td>
</tr>
</tbody>
</table>
Reflections on National Trust historic displays of ‘The Regen’

Fran McKinnon, who had worked extensively with the National Trust in the listing of The Regen in 1991 attended the meeting. She and her son Don brought along and displayed large historic photos of the reserves and the Morrices that had been used in the listing process (fig 19). These included photographs, maps, aerial images and species information. Most of the photographs came from Albert Morris’ private album compiled between 1936 and 1939 (the year of his death); some of which have made their way into the extensive archives held by both the BFNC and the Broken Hill Outback Archives. These images fleshed out stories and ideas for people who were not familiar with certain aspects of The Regen. For others, they stimulated conversations and reflections about change over time. Reflections that came about after discussing the displays highlighted important aspects of the history and elicited questions and management challenges that continue today. These physical objects, that had gained character with age, formed an enjoyable part of the workshop and created a different space through which encounter and discourse could take unexpected paths.

Figure 19: Workshop members browsing National Trust historic displays of The Regen: Regen Forum March 2017. Source: author.
Barrier Field Naturalists Club revival

The BNFC was begun by Albert Morris and at the time of the workshop was in its 96th year. Despite desires to keep the club going, it had become impossible with the lack of interest and financial capacity and had filed for closure the following week. The workshop averted this closure. It stimulated motivation of new volunteers to form a new executive, and many others in the room (even those living elsewhere) agreed to become financial members.

Albert Morris Regeneration Award

The concept of the proposed award was to get related organisations to work together so the stories about this early regeneration work are remembered, to acknowledge histories, and help avoid repeating the mistakes of the past. From the field visits, AABR were satisfied that The Regen areas met the ecological and technical criteria required to establish such an award. It was proposed that it be a permanent award, but only awarded for exceptional and high standard projects, hence not necessarily an annual award. The naming of the award became complicated. There were some in the room who were looking for the story of a hero. Others wanted to promote the importance of the power of collaborative relationships that resulted in The Regen. Proposed names included: Albert Morris Award, Albert and Margaret Morris Award, The Morris Award, Morrises Award, Broken Hill Regeneration Award and more. No consensus was reached on the name of the award until after the meeting, when it was decided by AABR to be the Albert Morris Award: For an outstanding Ecological Restoration Project. The citation for the award includes all who have been involved, especially Margaret Morris, BFNC, Keast and the mining community.

In 2018 the inaugural ‘Albert Morris Regeneration Award for an outstanding ecological restoration project’ was awarded to The Regen, and public events, tours and educational opportunities took place in Broken Hill. The relationships formed through this project are

521 It was evident witnessing assessments as an outsider that eagerness to attribute the project ‘ecological restoration’ status guided fact seeking and observation. As outlined in ‘Practice’ there were many aspects of this practice that did not fit with contemporary ‘Standards’ of ecological restoration that were happily overlooked.

ongoing. In addition to facilitation work, I was involved in promoting The Regen through a range of media channels.523

People of The Regen

![Image](image.png)

Figure 20: Ann Evers on her property with The Regen in the background, March 2017. Source: author.

A final mention must be made of the enduring role of individual passionate people like Ann Evers to The Regen today (fig 20). In March 2017, Landcare members Ann Evers and Lindy Molesworth (rather than professional ecologists) provided tours of The Regen. Ann, a Landcare representative and property owner, was important for her botanical knowledge, local knowledge, and connections. Her story, a typical story of the importance of local volunteers, is fundamental to the longevity of The Regen and the success of this project.

Ann Evers and Rick Ball’s property adjoins The Regen on the western side of Broken Hill. It’s raining softly when I arrive, giving it a mystical feeling. A diverse understory, including freshly sprouted Sturt Desert peas sit under flowering Mulga and Senna. It’s a soft green and yellow layer over the red earth. Despite being so close to the centre of town, this property marks the beginning of vast semi-arid country.

523 As a final practice of this work, I participated in public local journalism (radio, news print and a short video) to promote The Regen. See Brealey, “Honour Due to Green Belt Visionary,” Green and Adcock, The Regen Corridor: Interview with Lilian Pearce. I also participated in events hosted by the Broken Hill Art Exchange, speaking at a public launch, and having my photography included in the Broken Hill Art Exchange public exhibition ‘Desert Equinox: Water’.
Ann is a sculptor, working with native plant fibre, found objects, seeds and plants, many collected from their property and the Regen. She is the region’s human bowerbird. Ann is a walker. Through the local bushwalking club, she loves to share secrets with people, some of whom ‘have lived here their whole lives and have no idea.’ She is engulfed in the materiality of the natural world in its various states of repair and disrepair. Her latest instillation is of pelicans suspended from the dead trees over the empty Menindee Lakes, one of her more political statements about the health of the Darling River. This river, iconic in Australian folk law, flows (less and less regularly) away from the watchful eyes of those in the major cities. Ann is a self-professed ‘nuisance maker’, but she has found more recently that art is a quieter and more sustainable way to ruffle feathers. Yet she promises me that ‘if council started to build in The Regen they would hear about me.’ Ann is a gardener, tending her property, restoring local native species, growing Quandongs that she sold to the café in Silverton until it closed its doors, running native plant tours and diligently studying her floral neighbours. She says, ‘I know the plants, I know the rocks, I know the animals.’ A thin wire fence marks the end of their land tenure, but her place extends far into the horizon.

Rick is an artist maturing from a self-professed ‘privileged white boy’ brought up in Sydney, to a generous man who understands that ‘there is no way that you can understand this country in that [the settler experience of] time.’ Rick says that the exploration of his art practice is central to his health. Rick is a rare artist who, in the words of a friend, ‘paints time.’ He explains ‘I’d never been a painter of things…I’d never seen a noun.’ Rick says that ‘time has been expanded for me out here.’ Through his eyes, objects are understood as a place in their evolution; a rock once in darkness now in light and one day crumbled on the ground. His paintings, such as ‘Mallee Root Boy’ and ‘Dog man’ melt nature and culture into a reflection on place over time. Rick is a worrier, he gets a sense that today is ‘like the 1930s, pre-WWII with Hitler and we’re in this world of shut up–catapulting into a really bad time.’

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524 Ann and Rick discussed the power of using particular terminology for the way issues were considered. The use of the Barkindji name Barka for the Darling River is one such example, centring concerns around the ecological health of the river as opposed to the associated values of river views or motorboats involved in the conflicted campaign. All quotes from Ann and Rick come from interviews and casual conversations over my stay in March 2017.
It was in the 1930s that The Regen at the bottom of his garden was being planted, tending the wounded land. Today other pressing concerns trouble Rick, including the violent destruction of cultural heritage and illegality of protesting against mining. The conversation moves to an explanation steeped in invasive origins of ‘terra nullius.’ The umbilical cord between people and their land is being cut, resulting in both harm to self and land. When I ask about restoration Rick responds with ‘to undo is not the question.’ Rick is an art teacher in Menindee, challenging the system to create a place where the Barkindji kids can express their connection to place and culture through their art practice. These kids have collected over twenty thousand dollars’ worth of prizes for their art. Above all Rick strives to support the development of respect and trust that he sees as bastions for relationship between both people and the natural world. An Aboriginal elder in the community recently told Rick that what he’s doing with the kids is ‘giving ’em back the land.’

At the time when I first visit in June of 2016, Ann and Rick were busy preparing for their first combined exhibition, and I heard the conversation between earth, change and time that will play out within the walls of the Broken Hill Regional Art Gallery. Scattered around their property are fragments of crockery and the remnants of house sites abandoned because of the dust. Their house resisted abandonment because of the thick stone walls that surround it, which Ann is slowly restoring. This home and garden are made of a palimpsest of layered histories.

*Dust* has exposed the layered histories, complex notions of time, silenced voices, enduring questions of responsibility and diverse opportunities that operate within this ecological restoration project. It is time now to journey east to the Monaro to explore a different context and culture of ecological restoration.
Plates 1 & 2 over page show: 1: Evidence of Broken Hill Pride in a street sign; a tree on the Silver City Highway that pays homage to environmental feminism; rusted tanks at the decommissioned Browne’s Shaft (Junction Mine), and tyre tracks in The Regen. 2: Broken Hill ‘rip-rap’ holding back tailings seepage; artefacts of play in The Regen; Martha Gouniai and Wayne Lovis (Broken Hill Landcare) inspecting growth, and surprising life erupting from under the soil. Source: author.
Figure 21: Location of field site, Monaro, NSW. Source: author.
Background to research

Along the Snowy Mountains Highway I drive east. The higher I get, the slicker and tougher the foliage that has evolved to face the harsh alpine conditions. Sclerophyllous, spindly, windy, wild; hardy, tortured beauties. I pull off the road to gaze up at the contrasting stiff straight megalith pipes that are the Snowy Mountain Hydroelectric Scheme. History has a story to tell here about the hydroelectric scheme within the post-war culture of ‘improvement works’ of the 1950s/60s; a model of progress and the making of the modern nation. History also holds cultural stories of the people of the region through time; of how their relationships with the environment shifted through practical experiences and the rise of the new science of ecology. Today, these stories live on in the ways that individual farming families make sense of and respond to their experiences of place. The winding road descends, and the gentle rolling hills of the Monaro lie ahead (fig 21).

The Monaro of today can be understood through the interconnections between soil conservation, alpine grazing and the Snowy Mountains hydroelectric scheme. The growing Australian concern about soil erosion of the 1930s made its way across the Great Dividing Range. Eastward, on the slopes of the Monaro, fragile soils felt the wrath of hard hooves and the plough, and, when drought came, had little buffering capacity against soil loss. Concerns about soil erosion in an alpine context were to have a profound impact on cultures of alpine grazing. As early at 1928, as John Merritt writes, ‘Charles Lane Poole, the Director of the Commonwealth Forestry Bureau, warned that ‘man and his stock’ could cause irreparable damage to the mountain catchments of the Murray River.’ 525 Nevertheless, big industrialised agriculture brought a mechanistic economic-driven mindset that made its way into the regional imaginary amidst a post-war improvement culture of the 1950s. Environmental activist Vandana Shiva describes the rise of industrial agriculture as ‘Eco-Apartheid.’ 526 ‘Countless specialists tell us’, writes Jackson, ‘that the disruption to biodiversity and ecosystems is mostly due to agriculture.’ 527 This is Australia’s experience too.

526 Shiva, Making Peace With the Earth.
527 Jackson, Consulting the Genius of the Place: An Ecological Approach to a New Agriculture, 7.
Once, extensive species-rich swaths of grassland and grassy woodland ecosystems spread across the plains and riverine environments of Eastern Australia. Today, temperate native grasslands are among Australia’s most threatened ecosystems. Changing land management, agricultural practices (in particular grazing, ploughing and super-phosphate addition) and development have left less than one per cent of their estimated extent at the time of European colonisation, making the remaining extant the subject of much restoration attention and debate.  

528 Restoration of native grassland species and ecosystems has been the focus of ‘spirited study and restoration practice in Australia over the past 20 years’ writes McDonald. 529 ‘These ecosystems’ McDonald explains, ‘were the first in Australia to have been exploited for agricultural production and they have been the subject of prolonged restoration attention.’ 530 There is also a growing industry of seed production and improved techniques to restore native grasslands. 531 However, the application and long-term commitment to restoration techniques requires social, cultural and financial commitment and a change of management practices that has not resulted. As Cocks writes: ‘Biologists, ecologists and conservationists have recognized that solutions to biological problems lie in the mechanisms of social, cultural, and economic systems.’ 532

528 Williams, Marshall, and Morgan, Land of Sweeping Plains: Managing and Restoring the Native Grasslands of South-Eastern Australia.
530 McDonald, 2.
There has been a dramatic shift in thinking of grasslands as climax vegetation to understanding that they are in part ‘man-made’ landscapes. Restoration of grasslands and grassy woodlands involves dedicated human activity. While some grasslands are managed within parks and reserves, the greatest area of remaining native grassland is found on private land. Remaining areas of ecological type *Natural Temperate Grassland of the Southern Tablelands of New South Wales and the Australian Capital Territory* persist on fragmented public and private land. How these ecosystems fit within daily-lives and whole-farm systems in productive landscapes matters to their future.

Native grasslands and grassy-woodlands continue as resilient vegetation with tenacious roots, integral to farm management amidst challenging ecological conditions. They often form an important component of low-input, grazing systems. There are opportunities for native grasslands to contribute to both biodiversity outcomes for native vegetation, as well as to farm function and profitability. In working productive landscapes, cost, belief and feasibility determine actions and current ecological quality is directly related to land management histories. Importantly, individual beliefs and values largely determine management actions that influence ecological outcomes. This makes it imperative that landholders’ relationships with native grasslands are understood, within a changing, historical context. Practices are the sum of complex interactions between multiple cultures, multiple imaginaries, technologies, geologies and ecologies.

Little has changed since Keith Hancock said in 1972 of managers on the Monaro: ‘nowadays, to be sure, they have abundant scientific advice, but they still have to make their own decisions, their own mistakes and their own ‘improvements.’ However as articulated in the previous study, soil conservation concerns were known from decades earlier at a national level. Private

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535 Lunt, “European Management of Remnant Grassy Forests and Woodlands in South-Eastern Australia - Past Present and Future?”
536 Pearce and Dorrough, “Understanding the Place of Native Grasslands on Productive Land in NSW: Results from Social Research with Private Landholders,” 2016.
537 Hancock, *Discovering Monaro: A Study of Man’s Impact on His Environment*, 12.
property rights continue to be reasserted over the well-being of a nation at large, and in doing so, make conservation concerns that of the individual, rather than that of the collective. This work seeks to enhance understanding of restoration activities on private land and considers restoration in ‘productive’ landscapes.  

Philosopher Paul Thompson writes ‘[A]ny philosophy to be believed in or acted upon must have some place for agriculture.’ The land within productive property boundaries is a powerful contributor to restoration conversation and action. Any culture of restoration must have some place for agriculture. Instead of the classical looking away from productive landscapes for conservation outcomes, we need to look towards them.

Soil dictates the possibilities and changing relationships in place and carries the embedded history of environmental management practices. While soil histories may be neglected, they remain underneath feet and scales, hooves and tyres. They are evident in altered soil profiles, pH, nutrients, stored and expired seed stores, mycorrhizal relationships and water holding capacities. Discourses of environmental management, ‘improvement’ and conservation (particularly of soil) are significant as powerful contributors to the reassertion of private property rights and distinctions between places for ‘conservation’ and places for ‘production’ in the post-war era of the 1950s. The motivations of private land managers developed over generations of practice are historically informed, as my research with individual families on private land with high conservation values shows. Some restoration practices are unintentional, others do not respond as expected, highlighting the role of bigger processes at play. Farming practices are being re-purposed for restorative processes, with objects being engaged as tools for remembering and redress. This work highlights the important role of individual and

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538 Research reported on in this section developed out of various projects conducted between 2013 and 2018. In the earliest work (2013-2015), I was a full-time research assistant on a project entitled Australian Native Grasslands: Understanding landscapes and communities in transition, with the Australian Research Centre for Urban Ecology (University of Melbourne and Royal Botanic Gardens Melbourne). The work arose from the recognition that ecological sciences understood many of the reasons for decline and possibilities for restoration of native grasslands; however, management decisions were shaped by poorly understood social factors. In the second (2015), I consulted for the same group, working on a project in partnership with Kosciuszko to Coast and Natural Regeneration Australia, exploring the place of native grasslands on private productive land. In the third (2015-2016), I consulted for the New South Wales South East Local Land Services, tasked with providing material to assist in communications with productive landholders about the values of native grasslands. For the work undertaken within my PhD candidature (2016-2018), I explored relationships with native grasslands on private productive land context through property visits and ongoing dialogue with three families who were involved in the 2015 study. This provided insight into a history of their farming, conservation, and restoration activities; the role of history in future relationships with the land; opportunities to support efforts for restoration in a holistic sense, and barriers to conservation/restoration of native grasslands.

539 Thompson, The Spirit of the Soil: Agriculture and Environmental Ethics, 12.
collective memory in shaping the future of native grassland ecosystems and invites critical reflections on spatial boundaries, policies, property rights and expectations in restoration projects.
Soil: History

Soil & the Monaro

In Discovering Monaro: A Study of Man’s Impact on his Environment, historian Keith Hancock describes the fluid origins of the region, expressing that the Monaro has ‘long since lost such a chance as it ever had of achieving a precise administrative definition.’ He portrays ‘all the different Monaros’ that could be overlaid on a map, arriving at an area of approximately 5,400 square miles.540 ‘Undulating downs, long projected hills among them, covered with very few trees.’ This was how zoologist John Lhotsky described the grassy plains of Cooma, NSW, in 1834.541 An early depiction of the Monaro can be found in artist Oswald Brierly’s 1842-1843 journal, where men on horseback ride amidst rocky outcrops and small fires under the Snowy Mountains, evidence of frequent burning (fig 22).542

Figure 22: Oswald W.B. Brierly - Journal of a visit to Twofold Bay, Maneroo, and Districts beyond the Snowy River, Dec. 1842 to Jan. 1843. Source: State Library of NSW Manuscripts, Oral History and Pictures Catalogue.

540 Hancock, Discovering Monaro: A Study of Man’s Impact on His Environment, 6, 8.
541 Benson, “The Native Grasslands of the Monaro Region: Southern Tablelands of NSW.”
The high-country grasslands have a rich cultural history. The Monaro is home to many Aboriginal peoples, primarily the Ngarigo (tablelands) and the Wogul or Wolgalu (high country), but also the Gundawahl, Djillamtong, Berrengobugge, Yaimatong, Croatingalong and Yuin peoples. The land’s abundance was carefully tended in farming practices highly attuned to place, where starch-rich yam fields awaited harvest, native grasses were milled for flour and succulent chocolate lilies wafted sweet aroma across fields. Each summer, people ascended to the ridges to feast on the nutrient and protein-rich food source of migratory Bogong moths (Agrotis infusa). The cultural migration driven by moth harvest served a deeper purpose of intercultural meetings, initiation rites, corroborees, trade and friendship. This is a peopled place, both in ancient history and in contemporary practice - a worked, ‘productive’ landscape.

Contemporary ecological and social relationships are impacted by over two hundred years of interventions, some of them violent, in a complex cultural landscape. Stories from this region are woven into the dominant Australian imaginary, and in particular, of the settler-colonial story of people and nature. This is the land of pioneering fables of stoic frontier labour and bushranger-led man from Snowy-river horseback adventure amidst the slick cattle dogs and fleece of 18th century oil paintings.

The biophysical realities of the land and the cultural imaginaries of the place are both active participants in ecological restoration practices drawing on vastly different temporalities. Hancock contrasts the contested representations of this Monaro with the maps that natural scientists make; those of finer scale which lack in ambiguity, suggesting that historians and ecologists ought to keep in close contact. This is useful advice too, for ecological restoration. Histories of place and are enriched by considering both social and ecological foundations.

In order to understand contemporary land management in the Monaro, we need to begin with regional historic relationships between ecological science and grazing. Passing time twists

544 Flood, The Moth Hunters: Aboriginal Prehistory of the Australian Alps; Flood, Moth Hunters of the Australian Capital Territory. For details about the Bogong Moth see Warrant et al., “The Australian Bogong Moth Agrotis Infusa: A Long-Distance Nocturnal Navigator.” In recent years the Bogong moth numbers are rapidly declining, threatening contemporary ecological processes and cultural practices. See Khan, “Decline in Bogong Moth Numbers Could Have Catastrophic Effects in the Australian Alps.”
545 This imaginary was widely popularised by Banjo Paterson’s poem then turned film ‘The Man from Snowy River’. See Paterson, The Man From Snowy River and Other Verses.
546 Hancock, Discovering Monaro: A Study of Man’s Impact on His Environment.
settler imaginaries into the demands of place. Accumulated experience refashions the understanding of interactions between local ecologies, imaginaries and grazing pressure. In the Monaro, people have been both spoilers and improvers of the land and consequently, ‘both a spoiler and an improver of his own material and spiritual condition, in short term and in long term.’

Large livestock production in the Monaro has historically been sustained by grazing of cattle and sheep in the higher country. Alpine grazing became a lifeline that provided immunity from ill-fitting ideas of the local environments’ capacity for supporting stock that in tough years were ‘starving on their over-stocked and drought-afflicted stations.’ By the 1830s, cattle grazing by white settlers had begun in the Goulburn, Canberra and Monaro regions of the Snowy Mountains. Also, in the 1830s restrictions on the spread of settlement in NSW were lifted, further expanding grazing impacts and vegetation clearing across the state. By the 1840s, larger mobs of cattle and sheep were sent into the highlands each summer.

The impacts of European agriculture were quickly identified. Some of these are articulated by the explorer Pawet Strzelecki, who wrote scathingly of the impact of agricultural ‘progress’ on New South Wales in 1841:

>[T]he drought, however, in New South Wales seems to me to have an additional cause to that or those which elsewhere occasion extraordinary dryness of the soil: namely, the alteration which colonisation impresses on its surface; the herbaceous, high and thick plants; the continued forest; the underwood; the brush, which so well clothed the crust and sheltered the moisture, have disappeared under the innumerable flocks and axes which the settlers have introduced…the superficial state of the soil, and the constitution of organic and inorganic bodies placed upon it, finds itself altered here…Human industry hitherto but increases the evil; the rotation of crops, dams to arrest the torrents, reservoirs to contain and preserve them, artesian wells to bring to the surface those innumerable hidden sources, irrigation, manuring, artificial grasses, have yet to make their appearance on this colony.

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547 Hancock, 106. The depiction of British settlers as ‘spoilers’ of land though manipulation of the environment for economic purposes was later made popular by Geoffrey Bolton: Bolton, Spoils and Spoilers.

548 Hancock, Discovering Monaro: A Study of Man’s Impact on His Environment, 132.


550 Enclosed in a despatch from Gipps to the Secretary of state, 28 September 1840, and printed in H. of L. Sess. Papers, 1841(85), 12-19 in Hancock, Discovering Monaro: A Study of Man’s Impact on His Environment, 75.
Furthermore, in the late 19th and early 20th centuries, mass-killing and baiting of animals was carried out in the Monaro to protect gardens and crops, and ‘blood-money’ was paid ‘to persons who produced the scalps or paws or tails or talons of animals that had been declared noxious.’

Until the 1890s, there was no official control over highland grazing. Noticeable ecological decline, concerns about soil erosion in the district, and growing desires for recreational enjoyment of the alpine ecosystems led to sanctions, and then limitations, to use. In 1889, the Crown Lands (Amendment) Act generated the capacity of the Lands Department to garner revenue for leases and tenancies. Leases and licences were sought by the ‘big’ ‘white men in the high country’ to increase their leasehold capacity and access to land, who were, in Hancock’s words, ‘buying insurance against drought.’

The district continued to develop. A second wave of agricultural growth came in October 1900, when the Bombala-Eden District was recommended by the Oliver Royal Commission as the Federal Capital Site. Following WWI, the Monaro region was included in the allocation of the soldier settlement project. Traumatised men were settled on blocks often too small to sustain profitable operations. As historian Don Watson puts it:

[S]incere and generous as the intentions may have been, sending ex-service men to struggle in the Victorian Mallee, the backblocks of New South Wales, the forests of Queensland, or land afflicted with poison bush, salinity and weeds, made the First World War schemes a byword for folly and bastardry.

The result was a population of farmers, many from the city and with no training in farming, who largely learnt through trial and error. Furthermore, their progress was slowed by ‘war injuries, mental scars and the Great Depression.’ Closer settlement further exacerbated pressures. As geographer John Merritt recounts:

[The Monaro had always been difficult country for graziers, and denser settlement intensified the difficulties. While the first settlers moved onto large, well-grassed plains, promise and reality were

551 Hancock, 113.
552 Hancock, 141.
553 “ Discover Our Territory.”
556 Connors, “ Closer Settlement Schemes.”
Vegetation clearing had a dramatic impact on soils. It was realised over time, writes Hancock, that ‘[G]ood pasture was not the invariable successor to a stand of eucalyptus; the successor might be poor grass, or impenetrable scrub, or a landslide.’ Over time, ‘[T]houghtful people began to see the necessity of establishing an alternative soil cover as good as, or better than, the trees that had been destroyed.’ Once the soil was exposed its fragility was better understood.

The history of Australian ecological science and conservation is deeply woven with that of soil conservation. The first government agency for soil conservation was established in New South Wales in 1938. Yet, as Robin has pointed out, while soil conservation agencies existed in NSW from 1938 and in Victoria from 1940, it took until the 1950s for them to be ‘taken seriously, as the nation’s response to the massive agricultural disaster which had touched so many people.’

From the early 1940s, the Soil Conservation Board conscripted Victorian botanists concerned about soil loss to work on alpine ecology. Pioneering ecologist Maisie Fawcett was successful in drawing political attention to the destruction of alpine ecosystems by hard-hooved animals. Fawcett’s work was of great influence on Alec Costin, a soil scientist who specialised in alpine environments. Costin moved into the realm of ecology to argue at a systems level, including in his arguments, aesthetic principles. His 1925 book *A study of the ecosystems of the Monaro region of New South Wales: with special reference to soil erosion* is touted as one of the first published full regional studies of an ecosystem. Costin’s campaigning work to save the ‘Kosciusko Tops’ in the 1950s changed the place of ecological science and conservation in the nation. As Robin attests, ‘[T]he success of the 1950s established the credibility of science and scientists in conservation matters.’ Merritt argues that Monaro-based field officers of the NSW Soil Conservation Service also had a strong role to play in convincing Monaro graziers that they were able to manage their operations without the snow leases granting them access to

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558 Hancock, *Discovering Monaro: A Study of Man’s Impact on His Environment*, 129.
562 Robin, “Radical Ecology and Conservation Science: An Australian Perspective,” 191. Spelling of ‘Kosciusko’ here consistent with the time but was changed in 1997 to be consistent with its namesake.
While reducing grazing pressure on the alpine tops was a positive for ecological conditions, it also increased grazing pressure and soil erosion within private property boundaries.

In the period after WWII, pro-development, technocratic, nation-building projects soared. The Snowy Mountains Hydroelectric Scheme formed part of the nation-building agenda. It was one of a series of rural development works of the era; marking the commitment to increase both agriculture production and the nation’s population, which, as Muir states, was involved in buffering the threat of invasion from Asia. The ‘prevailing ideology’ from World War II to the early 1970s in Australia, write sociologist Geoffrey Lawrence and geographer Frank Vanclay, was ‘one of economic and agricultural “development” – not only as a means of contributing to the reconstruction of a war-ravaged world, but also as a means of stimulating internal economic growth’ where ‘[R]ural producers were encouraged to produce as much as possible utilising the most advanced technologies.’ It was a perfect storm, explains Jones: ‘[I]t was not until post-war rural reconstruction, reinforced by the prosperity of the 1950s Australia, the high price of agricultural goods and unusual absence of drought, that settled modern, industrial agriculture became firmly entrenched.’

The introduction of land-altering technologies worked to transform Australian ecosystems to the needs of a growing settler populace and establish Australian products within global trade. There was a scientific burst into research and technology development and the rapid uptake of industrial agriculture. Chemical herbicides became common in the management of food systems post WWII, and, along with synthetic fertilisers, impacted native ecosystems. Technological advancements like the tractor and mechanised plough were celebrated amidst a culture of excited post-war land modification. These technologies furthered the irreversible transformation of the Australian continent. As Jackson writes, ‘the 1950s were a time of industrial agriculture, the booming of fossil fuel resources, and turning to technology to solve complex problems.’ However, investment in technology pushed farmers into debt and drove

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564 Muir, The Broken Promise of Agricultural Progress: An Environmental History, 185.
566 Jones, Slow Catastrophes: Living with Drought in Australia, 327.
567 Jackson, Consulting the Genius of the Place: An Ecological Approach to a New Agriculture, 125.
them to run the land harder in order to ‘service financial pressures.’ 568 New industrial technologies also shifted farming into a mechanistic and faster-paced relationship with the land. In a letter to Wes Jackson, dated November 11, 1980, Wendell Berry writes evocatively about this change, stating ‘[W]orking with a tractor is damned dulling and boring. It is like making love in boxing gloves.’ 569

The mechanisation of labour and farming has increased rapidly since the 1950s. So too have dreams of productivity unbound by biophysical realities. Hancock explains that the native pastures were appropriate for the needs of the early settlers. However, three generations later, the rate of production did not satisfy needs and pasture ‘improvement’ was becoming mainstream. Improvement was to become ‘the watchword of a large capitalistic venture, The Australian Agricultural Society [founded 1822].’ 570 Again, ideas of production were framed around European possibilities, and pasture too, was acclimatised.

The 1950s were also a decade of ecological reflection that marked both the establishment and contribution of ecological science to environmentalism. The scientists, with the aid of the Kosciusko State Park Trust first banned grazing in the high areas and second, established a ‘primitive area’ that protected the unspoilt nature of Mt. Kosciuszko from a proposed expansion of the Snowy Mountains Hydro-Electric Authority. Deidre Slattery calls the Primitive Area Dispute of 1958–65 ‘a seminal episode in the development of a nature conservation philosophy in Australia.’ 571 As Merritt explains, ‘the rapid social transformation of post-war Australia also made the end of mountain grazing less disruptive socially in the Monaro than it might otherwise have been.’ 572 This moment was a turning point for the use of conservation science in driving policy.

Where historically, high country grazing in tough years was accepted as a lifeline for graziers in marginal areas, now graziers were presented as the destructive force that threatened alpine conservation. This worked in the favour of the Snowy Mountains Hydro-Electric Authority

569 Jackson, Consulting the Genius of the Place: An Ecological Approach to a New Agriculture, 35.
570 Hancock, Discovering Monaro: A Study of Man's Impact on His Environment, 72. Hancock makes the point that pasture improvement can be seen as similar to the efforts of Acclimatisation Societies.
who appreciated the removal of graziers and their stock from the land they hoped to develop for irrigation and power. It deflected concerns about damage and responsibility away from them and towards graziers. In Robin’s words:

[It] was probably one of the best public relations exercises ever undertaken by such as authority. Not only did it take attention away from its own mistakes, it served to point the finger at the local farmers as the ‘poor land-users’ who created environmental havoc by grazing hard-hooved animals on country that could not tolerate such treatment.573

Industry successfully deflected responsibility for public environmental goods to individuals, at the same time as making their trying task of grazing in marginal country more difficult.

This move also reinforced the cultural chasm between production and conservation. Importantly, as Merritt writes:

graziers were not opposed to the Snowy scheme [and]…they were prepared to restrict their activities in order to lessen the erosion danger to catchments. Nor were they opposed to a park. But they did object to a total and unqualified eviction.574

Nevertheless, the shift saw a tension develop between scientists and graziers. On the one hand, they shared a common need for healthy land and soil and fodder; on the other, Costin and soil conservation concerns were responsible for leading the case against snow leases in the 1950s.

In time, ethical concerns for ecological protection broadened. After the removal of high-country grazing in NSW in 1958, scientists turned their focus toward halting the expansion of the hydroelectric scheme. The fragility of the soil, the concern for native vegetation and the significance of unaltered hydrology were used as rational arguments against development. The 1950s were, as Robin describes, ‘an era when scientific ecology dominated environmental activism.’575 Supporters of the Snowy Mountains Hydro-Electric Authority proposed vast rehabilitation programs using both native and exotic plants to appease conservation concerns.576 Here again, restoration was being proposed as a way of bolstering industrial progress. However, ecological

data was used to demonstrate the impossibility of rehabilitating such complexity. This science fell on empathetic ears and preservationist mentalities took hold. From the early 1960s, North American inspired visions of wilderness preservation crept in, and tourist operations within the park began.577

Today the Snowy Mountains form part of the 698,000 hectares of land that makes up Kosciuszko National Park (formed 1967). Alpine grazing in the high country is still a hotly contested issue. Beyond stock, the place of wild horses (brumbies) in the region is disputed. A 2018 planned cull was reversed because the brumbies were deemed to have cultural significance.578 Across the border in Victoria, they are culled to protect ecological systems.579 Graziers remain on some of the toughest country: the rolling, wind-swept, dry Monaro plains, with no access to the old snow leases. Amidst this landscape are fragments of high conservation value grasslands, just hanging on, both inside and outside of spaces for ‘nature.’

Private family farms are integral to the future of Australian ecosystems. A study in 2010 by prominent Australian ecologists demonstrated that 80 per cent of threatened species occur outside Australia’s national reserve system and 12 per cent occur in areas with no protection status.580 These threatened species alone require the enlistment of private land managers for their future, but many more species and ecological relationships exist on private land. As Jones points out, 90 per cent of Australian farming properties are still run by family-owner operators. With 410 million hectares of Australia occupied by agricultural practices, farmers and their land remain essential for the natural and social environment.581

This history of the region provides insight into the ways that the Monaro has been divided. While the expectation of production remained the same, the boundaries of already marginal lands were solidified. This history explains the way that soil-conservation science transcended traditional divisions to unite unlikely allies. Present-day efforts between graziers and ecologists

577 Slattery. Not only was this ancient Country of Indigenous Australians, but it was also riddled with recent histories of grazing that did not seem to mar the vision.
578 Becker and Pittaway, “Brumby Cull Backflip Divides Communities across New South Wales and Victoria.”
579 Dawson, “The Population Ecology of Feral Horses in the Australian Alps Management Summary Prepared for the Australian Alps Liaison Committee April 2005”; Driscoll et al., “Impacts of Feral Horses in the Australian Alps and Evidence-Based Solutions.” This highlights the complexity of values and stories in shaping ideas of belonging.
581 Jones, Slow Catastrophes: Living with Drought in Australia.
to restore ecosystems are founded around a shared and ongoing understanding of the significance of healthy soil to the region and the pressures of grazing marginal country. Yet, enduring structural forces (global market pressures, industrial agriculture competitors, inflexible conservation programs) and biophysical limits (denied through social imaginaries of technical ‘progress’) that have their origins in 1950s, inhibit the possible extent of conservation actions.

To understand the cultural significance of these legacies and relationships with them over time we need to turn to ‘personal experience and oral tradition.’ Management decisions are complicated, personal and emotional. Family attitudes, individual experiences and memories overlap and interact to shape land management and restoration activities. In order to understand the dynamics of the Monaro and the relationship between the past and the present, we need, as Hancock exclaimed, ‘testimony based on local knowledge.’ Jones argues for the significance of life stories in understanding responses to drought in Australia as ‘the whole context of a person’s life, their family, environment, economic situation, community, personality and gender, as well as the period in which they farmed, creates circumstances for adaptation.’ Similarly, in order to understand the place of restoration on productive land in the Monaro, particularities of life stories and practices are necessary. It is to this, within the experiences of three families, that the thesis now turns.

583 Jones, Slow Catastrophes: Living with Drought in Australia, xvi.
584 Hancock, Discovering Monaro: A Study of Man’s Impact on His Environment, 59.
585 Jones, Slow Catastrophes: Living with Drought in Australia, xxiii.
Soil: Practice

Making it personal: Stories of objects in land

Squat down, face to the earth. It smells different here, tired and worn, holding on to an ancient wisdom of tiny petals and lichen crust, holding tight and quiet and still. I’m told of old stories weathered and wild and new approaches boldly trialled. We jump fences, scale rocks and scan horizons. This work is literally grounded in place; we explore properties in boots and utes with working dogs by our sides. This work is also grounded in ideas of self in the material world and the powerful role of memory in shaping practice. It gives voice to the stories, activities and memories of three family groups on agricultural properties in the Monaro, NSW.586

Family archives (photographs, diaries and maps) are part of practice, as they trigger cultural memories and insights and motivate change. They provide perspectives from the ground up, constructed over and over according to shifting purposes through the changes, challenges and opportunities in farming in the Monaro. In each case the families involved indicate a deeply attuned sense of place and care for the land as paramount, supporting Jones’ claim that:

[A]cknowledging the role of sentiment in managing the land is not anachronistic romanticism but part of a mature acceptance that sustainably producing food in our biophysical environment

586. I invited these three families to participate because they had high quality native grasslands patches and were managing their properties in interesting ways that had changed over time in response to place-based lessons. All three families are, or had been, involved in some ecological restoration programs/incentives, and are conducting on-going regenerative projects. They are all multi-generation farms that are able to speak to the experience of changes over time influencing their management practices and relationships with place. An existing record of their management practices was known from a previous 2016 study. This section builds on work conducted in 2016 with the Australian Research Centre for Urban Ecology (ARCUE) and Natural Regeneration Australia and funded by the Myer Foundation, Kosciuszko to Coast (K2C) and South East Local Land Services (SE LLS). Though outside the scope of this thesis, the work of the 2016 project overlapped in time and guided this, further research. It is important to recognise these origins. The 2016 study involved a survey and semi-structured interviews with 31 people over 23 properties to elicit the landholder’s understanding of native grasslands, drivers of native grassland management decisions, the place of native grasslands in the whole property system, and the perceived future of native grasslands on the property. Participant landholders were recruited for the 2016 project, via relevant community groups, conservation agency programs and non-government organisations within the Monaro and the region surrounding the Lake George (NSW). In it, L. Pearce led design of social research trained interviewers and conducted transcript analysis and writing. Dr. Josh Dorrough (Natural Regeneration Australia) conducted interviews in the Monaro region and assisted with analysis and writing. Kathryn Wells (then K2C) conducted interviews in the Lake George region. Dr. Dave Kendal (then ARCUE) assisted design and interpretation feedback. Dr. Donna Hazel (SE LLS) provided financial support for further analysis and reporting. Pearce and Dorrough authored report: Understanding the place of Native Grasslands on Productive land in NSW: Results from social research with private landholders 2016.
requires caring strongly for the land and its future.  

This research exposes how classical ecological restoration projects become linked with emerging regenerative agricultural practices focusing on both self and the land, that are redefining particular notions of production.

Farm histories and restoration tales frequently focus on the fence, the map and the photograph. These objects act as mnemonics: tools to trigger memory and stimulate reflection. The Merriam-Webster dictionary defines artefact as ‘a usually simple object (such as a tool or ornament) showing human workmanship or modification as distinguished from a natural object’, and, ‘a product of artificial character (as in a scientific test) due usually to extraneous (such as human) agency.” Both meanings accentuate the human agency involved in land modification and are useful to bring into discussions of degradation and restoration. These objects, or artefacts, inspire changing practices and imaginaries. After introducing each family to set the personal social context, practices are narrated through these three ‘objects in the land.”

The brief family histories presented below introduce the contexts within which triggers for change can be understood.

**Montreal**

Wilkinson Farm, March 2017.

A stand of poplar trees marked the entrance to ‘Montreal’. A long driveway allowed me time to settle into the place and take my bearings before being observed; through a herd of cows and over cattle grates to the house, where I was welcomed at the garden gate. I met here with Dunbar Wilkinson and his parents, June and Bob Wilkinson.

The reflections on this property come from many hours over cups of tea and biscuits, old family photo albums, and two farm tours (with Dunbar and the dogs). On these trips, we visited sites

587 Jones, Slow Catastrophes: Living with Drought in Australia, 330.
589 Unless otherwise stated, quotes in Soil: Practice come from interviews conducted by the author with named participants on their properties in November 2015/March 2017 (Millpost) or March 2017 (Millpost, Severn Park and Montreal).
in the old photographs to consider change. I was particularly interested in the discussions that the images evoked. Some discussions happened around the kitchen table, and others were taken out into the field. The photographs became artefacts of the property’s history, as well as powerful storytelling tools.

There is a unique quality when conversing with multiple generations at once; the dialogue between family members provides much insight. Bob is mostly quiet except for careful attention to detail, acting as the encyclopaedic farm memory. June is a passionate conservationist and tells the majority of the stories; Dunbar focuses on the practical management, current farm-system approaches, market challenges and restoration attempts. He has been heavily influenced by his parents, as well as by practical learning on the farm. Through his own life, and through raising his family here, Dunbar has refined his own farming ethics and management techniques.

Bob’s Great Grandfather purchased the original property that lies just southwest of Cooma, in the Monaro. He had previously worked in the region for five years. In Dunbar’s words ‘he got a feel for the country…learning how to read it, before he selected his land.’ This set him in good stead ahead of quick farm prospectors with little or no experience in the local region. Though still marginal grazing land, Dunbar says it isn’t the harshest of the treeless-plains country. The farm is made up of treeless open basalt plains, some lighter shadier country with snowgum (Eucalyptus pauciflora) and mixed shrubs, and open rolling granite plains. The family have their own names for the topography, like ‘Poached Egg Hill’, ‘One Tree Hill’ and the neighbouring ‘Little Willow Paddock.’

Since the family took ownership, the land has mostly been managed with a mix of sheep and a small proportion of cattle. Through the 50s, 60s and 70s, Bob carried out some pasture improvement of introduced species and a small amount of cropping for fodder. Before then, the main alteration to the land came from hard hooves, changing of watercourses, and the cessation of local burning regimes that accompanied European settlement continent-wide. Over the years, the property boundaries have changed—some parts sold off and others adjusted and split within the family through succession. Today, Dunbar and his brother Sinclair each run 3000 of the 6000 acres of land; Dunbar has ‘Montreal’ and Sinclair has ‘Quartz Hill’.

The family has developed strong relationships with universities and research scientists to support different species that thrive on their property and regularly work with scientists and
researchers. There is great belief in their ability to make a difference, based in care for the land. June believes that positive change can come:

[O]f course, people would just say we’re just too idealistic we’re never going to wind the clock back so forget it and plough on, you know? All that is what you’re up against, but I do think that something drastic will happen.

**Severn Park**

Massy Farm, March 2017.

Conservation signs on gates have become a marker that I have found my destination. The first sign read: MINGENEW-IRWIN: Shrubs for Emission Reduction and Carbon Storage: Working with landholders in WA, NSW, SA and Victoria to demonstrate the benefits of forage shrubs. The second, the more familiar: Land for Wildlife: Community Environment Network.

I visited Severn Park to spend time with farmer, teacher and author Dr. Charles Massy (Charlie). I was interested in further investigating Charlie’s views on restoration in the current farming, climate and social context. I also wanted to discuss restorative agriculture and holistic management with this pioneer of the practice in the Monaro. Charlie taught sustainable agriculture at the Fenner School of Environment and Society at the Australian National University, and now teaches through the William Angliss TAFE (Melbourne). He is a prolific writer, having published books on the wool industry and farming in Australia. His most recent book was in its final stages of publication when I visited Severn Park, laid out chapter by chapter in an old shed now repurposed as a library. *Call of the Reed Warbler* (published 2017) is a biography–cum–ode to regenerative farming that has since received high acclaim.

Severn Park is 2000 acres of farming country made up of treeless basalt and granite grassy woodland. Charlie took over management of Severn Park at a young age when, part way through a science degree, he returned to run the family farm following his father’s death. He turned to the best people in the district, read widely and liaised with the Commonwealth Scientific and Industrial Research Organisation (CSIRO) to shape his management practices. Over the years, the property has changed in size and production system, but his family has remained. There has been a major shift in farming approach, from a specialty set-stock Merino stud tailored for fine wool using molecular genetics, to a full commitment to holistic-
management. He completed one of the early holistic management courses in the early 1990s, and fully adopted holistic grazing practices in the late 2000s.

Charlie now runs sheep through holistic grazing practices, buying and selling in accordance with the shifting capacity of the land. He attributes the motivation for change to the 1982 drought. He says it ‘precipitated a cracking of the mind.’ It was also ‘an internal dissonance’ that called to him. He described living with the contradiction of, on the one hand, planting trees right through the 80s, and on the other, wearing the land down through set-stocking. Charlie began to move production towards working within ecological limits, and challenging the traditional conservation/production binary.

_Millpost_

Watson and Turley Farm, November 2015 & March 2017.

Rocks, grasses and trees spill over the edges of public and private land. A rusty metal gate breaks the landscape lines, announcing: *Millpost, Wildlife Refuge*. A suite of herbs and grasses local to the Queanbeyan region of NSW tickled the underbelly of the car. They thrive between tyre tracks; a floral rumble strip of the long country driveway of one of many productive properties where restoration is part of a whole farm system.

At Millpost I visited Harry Watson and his parents David Watson and Judith Turley. Millpost is a 1100-hectare commercial fine wool growing property on the outskirts of Bungendore, NSW. It is just over forty kilometres by road from Canberra, Australia’s inland capital city and on the edge of the Monaro region.

I first met Harry at the Bungendore community hall, while presenting back to local property owners the outcomes of the 2016 ARCUE/NSW/K2C project. Harry was the only 30-something farmer involved in the initial study, and his commitment to conservation-focused farm management and local place stood out to me. Farm succession and the continuation of local

590 Rotational grazing and the subsequently developed Holistic Management were promoted by Alan Savory. The premise behind these methods is that with the correct use of grazing herbivores, they can assist in grassland rehabilitation. For more on Alan Savory, rotational grazing and holistic management see: https://www.savory.global/, accessed 12 April 2019. Debate about the claims of this practice continue. A proper exploration of this is outside the scope of this thesis but see review report by Maria Nordborg for further information: Nordborg, “Holistic Management – a Critical Review of Allan Savory’s Grazing Method.”
knowledge was a key concern that emerged in that study. It was exciting to have a younger age group represented in the room. In the first interview, he said:

I want to live here for the rest of my life, and I want to be involved in agriculture… I see agriculture as a way of allowing me to live here and manage the land for multiple benefits, probably foremost would be conservation. You see so many threats to the natural world at the moment and I see, sort of low intensity grazing of native pasture as being a way of being able to exist while complementing and improving the biodiversity value of the farm.

Harry and I kept in touch, and on two occasions–November 2015 and March 2017–I visited Millpost. We walked across paddocks and over fences and rises to where the ground cover becomes more intermittent. Along the way we discuss the history of the property, the production, the family, and the different ways that people have been in relationship with this place. The rich awareness of history and the changes through time were evident.

In 1923, David’s grandfather purchased the farm. Since that time, the low fertility sedimentary shale soil land has been primarily used for sheep grazing, though both cross-bred sheep and cattle have been run. Millpost has been left as mostly native pasture, with only a small amount of introduced pasture close to the house block. Through the 1920s and 30s ring-barking and scrubbing were employed to ‘improve’ the property. David explains that his father would say things like ‘there is no money in the land’, and that at one point he got ‘quite disillusioned with the money-making potential …and went into growing pine trees instead of wool.’

David grew up on a property called Murryong. Millpost was an outstation he visited through his childhood. In 1974, after studying an arts/law university degree, David and his three siblings took over Millpost. David says he took more of a ‘big-picture look’, rather than a ‘typical aggressive money-making farming-type attitude.’ With a keen interest in permaculture, and, with the support of his siblings, David developed part of the land under permaculture design principles. These remain central to contemporary farm management. The family have retained some degree of off-farm income to supplement their operations.

Millpost is run as a low-input system. Since 1979, little fertiliser has been used, and the natural productivity of the native pastures supports grazing. These pastures are valued as medicinal for the sheep. David explains ‘if we have sheep scouring on the richer pasture and we put them onto the native pasture they tend to dry up and clean up.’ After three generations of sheep farming on the property, David and Judith moved towards refining their product. They developed a fine wool flock with carefully selected Poll merino rams, moving from ‘quantity
and scale’ to ‘excellence of the product’: ‘[W]e decided’, says David, ‘we didn’t have enough land to make a living with scale. It had to be quality.’

Judith’s parents came from Scotland and England. She had no previous connections with the area, but thinks the lifestyle is in her genes. She says: ‘[M]y grandmother was a passionate gardener, and ever since I was a little girl all I wanted to do was live on a farm.’ She articulates that care ‘comes in’ when farmers ‘just bond with their country.’

The native grasslands and grassy woodlands at Millpost are rich with species diversity, which the family value greatly. Paddocks have different dominant native grasses, and are described as ‘Themeda paddocks’, ‘spear grass paddocks’ and ‘wire grass paddocks.’ The biodiversity is extensive. David boasts:

   [W]e’ve had people like [ecologist] Rainer Rehwinkel go for a walk here with other people and you know, after ten minutes he said I’ve just recorded 60 species, and that wasn’t necessarily in our best area. I think it’s a bit special what we’ve got here.

A series of dams and fences constructed over the years are visible from high on the property. On the lighter soils and hilled country, the native pastures dominate. Closer to the house on the lower big slopes there are introduced pastures that make up approximately 30 per cent of the productive property.

Personal experiences of social lives and material limits interact to create care and knowledge that shift ideas about production and local place. In order to be ‘productive’, these families understand that they have to conserve and restore ecological values and processes.

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591 High-quality products provide a competitive edge that enables families like the Watsons to reduce pressure on ecological systems while continuing to make the farm financially viable.
The Fence

Fences stimulate reflections and reimaginations of division of space. The ways they are employed in production and conservation shift as mentalities change. They are also objects with their own flexibility, agency and push-back.

Fencing stories

At Montreal, the land’s response to fencing instigated the first of their restoration projects. It occurred by accident in the 1960s, through ‘passive restoration.’ Bob had sown some pasture and fenced off the paddock to let it get ahead. The result, due to the protection of the area from grazing, was a mass recruitment of snow gum woodland. Since then, this area has been mainly shut off to protect the habitat, with only occasional crash grazing. Regeneration potential lying dormant in the soil became visible with the aid of a fence. The recruitment of the eucalypts, when allowed, conveyed the important message that nature held the capacity to heal itself if given the opportunity (fig 23–24). The flourishing response from the land inspired more intentional restoration work.

Another lesson for the Wilkinsons regards the dieback of snowgums in the fenced area. Dunbar says ‘I haven’t seen it anywhere else on the property. I’m just hoping it’s run its course…it started on trees that have been fenced off since 1985, so you can’t attribute it to livestock pressure.’ In this way, fenced portions of the property act as important markers of ecological change and comparisons against grazed areas.

Increasingly, fencing is becoming more flexible, reactive and place-based, either through increased paddocks and rotational grazing or through the use of portable electric fencing (fig 25). Improvements in electric fencing technology have increased the capacity for quick responses to the land’s conditions. Here, people are employing technological developments for

592 Crash grazing refers to heavy stocking on an area for a small amount of time to target particular species and shift vegetation make-up. It is used strategically to avoid flowering and seeding times in desirable species and to target them in undesirable species. See Freudenberger, “Conservation of Biodiversity in Grazed Landscapes: Some Patchy Principles.”

593 The idea that given the capacity, nature can ‘heal itself’ recurred through all place studies. With this attitude, restoration becomes about enabling nature: providing the opportunity, scenario and tools allow, rather than deny, inherent regenerative potential.

594 Tree dieback in the manna gums (Eucalyptus viminalis) is well documented in the Monaro, but it hasn’t been widely studied for Eucalyptus pauciflora. For information on tree dieback in the Monaro and its significance see: Ross and Brack, “Eucalyptus Viminalis Dieback in the Monaro Region, NSW Eucalyptus Viminalis Dieback in the Monaro Region, NSW.”
restorative practices via increasing flexibility in the system. At Millpost, reams of thin white poles delineate today’s paddock boundary. Nina, the young kelpie pup darts in and out of the electric fencing, letting out a ‘yelp’ when she brushes the wire. For the Watsons, New Zealand-made ‘Kiwitech’ electric fencing has been integral to bringing more flexibility into their production system. Kiwitech markets itself as facilitators of ‘TechnoGrazing’, which they define on their website as:

[A] systematised re-engineering of rotational grazing aimed at achieving a quantum leap in efficiency, sustainability and profitability by harnessing the efficiencies of intensive subdivision with a very cost-effective and time-effective package of materials, technologies, methodologies and practical techniques.\(^595\)

Harry describes Kiwitech fencing as ‘really nifty’, allowing him to move fencing quickly and without machinery, and giving him the ability to stray from straight lines. Harry’s father David explains the significance of this change to how it was when he was young:

Forty years ago, the property was divided into about 8 paddocks. Now we’ve got 50 and counting...we’ve got up to 100 on the plan and the way Harry’s going it might be more than that, 150. But this gives you options for rotating.

Such ability to move stock allows careful response to the conditions of the soil and the pasture that allows rest when needed.

What hasn’t changed, as Harry poignantly puts it, is the continual reliance on ‘wire and water’ that bind farmers. An increase in both fixed and mobile water-points has been required. At least, says Harry, with portable electric fencing the infrastructural investment is not fixed. He explains that this enhances their ability to manage native grasslands, which bring different challenges to pasture grasses. He says, ‘[I]t’s much harder to justify cost of infrastructure because the productivity is much lower. So, your bang for your buck is smaller so we tend to focus on the places where we would more quickly see the benefits.’

There is also a deeper-felt resistance to dividing the land. David said that their eldest son Roy ‘would probably be happier if we pulled down all the fences and went into a full-on shepherding

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life.’ He, like many, is sensitive to the ‘aesthetic impact’ and practical reality of walking on a property ‘more and more dissected with steel wire.’ A desire exists here to return to a different production ethic, one informed by sensitivity and motion, one based on situated knowledge. With electric fencing, rotational grazing can be introduced without the property feeling permanently divided up into smaller permanent segments.

The flexibility encouraged by new use of fencing relies on the farmer being present. Like shepherding, this kind of responsive fencing demands the day-to-day presence of farmers to inspect and react appropriately. The regular human presence increases the ability of land holders to respond quickly and specifically. Charlie tells me ‘[Y]ou’ve just got to be with your country the whole time, you get a gut feel, same with your animals. If they’re not happy and they tell you, you’ve got to know how to read the signs.’ He worries that ‘[I]ncreasingly it seems farmers are divorced from place’, treating it as a ‘mechanistic resource that you get into your tractor and pulverize with chemical machinery.’

Charlie was brought up in a traditional farming paradigm but is actively shifting his management techniques and ideas.596 The biggest shift is towards a practice of rotational grazing where fewer mobs of sheep are run through more paddocks, and the paddocks are rested in between.

People say ‘you’re always moving stock’, and you are, but, instead of having twenty to twenty-five mobs, we’ve only got two. Like they’ll only be in this paddock for two days and the reason for that at the moment, while your grass is growing. You’ve got to leave enough capacity for the grass seeds so they’re not starting from scratch again.

Charlie says: ‘I’ve taken a bit of country out of production, but in 15 years, I can open gates in a tough winter and lamb ewes, and I’m already doing that with some of the older ones.’ These comments echo older habits of migrating stock up the mountains in a difficult year, but within property boundaries. Changes to fencing are enhancing resilience within property boundaries.

The experience of fence-based conservation programs is very locally contingent. The Wilkinson family became the first on the Monaro to attempt a ‘Whole of Paddock Restoration’

596 See Massy, Call of the Reed Warbler: A New Agriculture and New Earth.
(WOPR) project with Greening Australia. WOPR is an incentive-based program that works against the principle of needing new infrastructure and big investment for restoration. Instead, restoration is carried out within existing paddocks to ‘restore degraded or cleared land…increasing productivity, providing shade and shelter for cattle, and creating large areas of new habitat for native wildlife.’ Dunbar reflects: ‘I really agree with its [WOPR] ethos…I’m a big fan of where they’re coming from, trying to get a lot more bang for [my] buck instead of a huge amount of money spent on fencing this corner of a paddock and having one isolated patch.’

Dunbar’s local knowledge informed aspects of the project design. The particular selection of the paddock for the WOPR project took into account the particular context, history, microclimate and complex ecological interactions. He knew that this paddock was previously wooded, as his intention was to restore rather than alter its ecological composition. Dunbar is also hopeful that the WOPR plantings will help to mitigate the boundary effects of a localised heat sink and locust problem on the boundary with a neighbour, by cooling their land and providing habitat for birds. This shows that property boundaries are not ecologically based, and that the connectivity that is denied by cadastral parcels cannot be overlooked in restoration projects.

It is evident that restoration projects are strengthened when they are underpinned by respectful relationships and informed by local knowledge. Dunbar says that the WOPR approach was ‘the best thing he has struck in restoration direction’ but adds that expectations need to be altered to the local ecological context and timeframes of the Monaro. He was excited to begin with, and found the project team accommodating, but is finding the results ‘more and more disappointing’ as time goes on. Contrary to other places, direct seeding resulted in a low strike rate in this region. Dunbar feels that it is more appropriate to plant tube stock in the Monaro. This local perspective was supported by the WOPR team and are adjusting their practices to suit the particular property. Another local critique of the WOPR program is the time for stock exclusion

597 Greening Australia, “Whole of Paddock Rehabilitation.” The inclusion of ‘increasing productivity’ highlights that activities remains bound by needs to push productivity always at the same time as arguing for conservation.
generally stipulated by the project. The experience of time here is very local and shaped by ecological processes. Dunbar says:

[I]t’s meant to be five years, but I’ve said ten years minimum. Fifteen in this country. It’s just not realistic to be putting livestock on trees in five years. Depending on what years we have it might be 20 years, you know? So, when you look at it in that picture that [financial] support I’ve been given drops away too but it’s a helpful hit in the back.

The Watsons have participated in various conservation agreements and scientific trials. The afternoon sun shines brightly on flecks of lemon beauty heads (*Calocephalus citreus*) that thrive in a fenced experimental plot established in the 1990s by local ecologist Rainer Rehwinkel. Dry soil crust, grass tufts and rocks crunch underfoot as we meander through the various patches of this long-term conservation area that excludes stock. It’s not been a particularly generous spring, yet the increase in the palette of both colour and texture from species diversity is evident. Their Commonwealth of Australia box-gum grassy woodland conservation agreement (federally funded) that they still follow stipulates six months rest over summer and six months of grazing over winter for the designated area.

In some cases, specifications of top-down projects are considered too limiting to be worth the benefits. The Watsons feel funding is often available if they want it, but they are sometimes put off by associated restrictions not scripted by the local social or ecological context. David says: ‘[W]e don’t need big ring-lock fences with a steel post every five metres in our grazing management system, but they have lowest common denominator thresholds.’ Harry adds: ‘[I]f you can fund it yourself you’re better off because there aren’t strings attached.’ An example of this is the particular materials for fencing stipulated under some grant schemes that isn’t their preference. Despite not being enrolled in the WOPR project, the Watsons are planning some whole-paddock restoration of shrub layers themselves. Their experience conveys that there is no prescriptive solution appropriate for every property/production system, rather, local place-based scenarios can be taken into account to enhance both production and conservation objectives.

At Montreal, tensions between preservationist conservation and integrated land management play out within the family and through spatial boundaries. Dunbar and I walk higher up the hill to a section of the property that has stock excluded almost all of the time. There is a noticeably greater diversity in the understory species than in surrounding paddocks. Large old eucalypts, lilies, various herbs and saltbush are holding on amidst fallen timber and both native and
introduced grasses. Dunbar conveys his trouble with having ‘beautiful areas that are sacred’ while simultaneously ‘flogging the hell out of’ the majority of the property. He explains ‘Mum’s very much into fencing something off and that’s that—it becomes sacred it should never be burned to leave it pristine.’ When Dunbar occasionally crash grazes a wooded paddock, he says ‘it only takes about 24 hours and Mum calls me—unfortunately it’s not hidden from view!’ Dunbar’s management ideal mimics graziers who moved stock up the mountain in a poor year, except within the property. He emphasizes how tough it is to make a living on the country in the middle of winter. He says ‘[T]here’s not a lot going on and it shuts itself down,’ lamenting ‘there probably were plants that filled that void pre-white man but if they were there they have predominantly gone now.’ It is this reflection that has led him to whole of paddock restoration attempts with bigger picture mixed-use regenerated areas.

At Severn Park, a collapsing fence allows ‘wild nature’ into this ‘private’ land. Charlie and I walk along the boundary of his property where it adjoins Wullwye National Park. It is an exposed spot with a spectacular view. He shows me where they’ve let the fence fall down on the boundary, and gruggly bush (*Melicytus dentatus*) creeps over the borderline line. With this action the land is imagined as continual, like the 440-million-year-old granite substrate. Charlie says, ‘we’ve now got sort of 1, 300 acres of that if you include ours and theirs, and then I’ve got other contiguous stuff here.’ Charlie’s sentiments convey appreciation for ecological processes and connection between the soil underneath (fig 26).598

The warped lines and large wombat holes in fences remind us that technologies asserted by humans are, once in the world, shaped by other encounters. At the Wilkinson’s we stop at a fence line that ostensibly divides grazed paddock from resting land. There are immediately obvious signs of animal life inside the fence. The worn fences around a regenerated plot allow a steady flow of native animals in and out but keep the cattle at bay. In the icy wind in the lee of the Kosciuszko tops, the kangaroos shelter amidst the bushy regenerated woodland while the cows stand exposed. Dunbar explains that one of the biggest hindrances to doing fenced restoration is wildlife, exacerbated by the increasing populations of kangaroos and wombats on the farm.

598 Note: Stock are restricted from accessing the park.
Kangaroo numbers have grown immensely with the constant provision of water and reduction in predators that came with fixed European agricultural practices. Like other property holders in the region, the Wilkinsons recognise that kangaroo populations have dramatically increased. Dunbar explains that Aboriginal people would have played a big part in ‘keeping kangaroo numbers in hand’ while non-human predators, he says, would have ‘keep things moving and keep some balance’. While he sees the need for some balance in the system through predation, he explains that ‘I also say that knowing that I haven’t got dingoes chewing my stock!’ Dunbar is frustrated at the lack of leadership shown by Government departments and Meat & Livestock Australia in promoting kangaroo meat as a safe, environmentally friendly alternative. He explains the market remains constrained by ‘misguided and emotional folly.’ The result is legally-sanctioned culling by unqualified marksmen (often resulting in slow deaths) with the proviso that no part of the animal can be consumed.

Increased water points and wider landscape changes have meant a boom in the population of kangaroos. New assertions of command and control are necessary to keep the system functioning. The immense grazing pressure from kangaroos can be the tipping point that inhibits the ability for ecological systems to regenerate between stock grazing. At Millpost, Harry tells me they have one to two thousand kangaroos on the property at one time, which he says is equivalent to five hundred to a thousand sheep. Even with the removal of sheep, the degree and timing of kangaroo grazing means that the floral species often don’t have enough time to recover, let alone flourish. He says that they cannot keep up with or afford the cost of shooting kangaroos: ‘we’ve shot five hundred in a winter before and you wouldn’t know it.’ The Watson family have reached the point of considering spending hundreds of thousands of dollars to build a kangaroo-proof fence around the whole farm.

Local ecologies and territoriality are perceived, pushed, negotiated and protected differently as a result of fencing transformations. The fixed boundaries between where ‘nature’ and ‘production’ belong are constantly being renegotiated at the private property level.

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599 For two examples of research into kangaroo management and harvesting see: Grigg, “Kangaroo Harvesting and the Conservation of Arid and Semi-arid Rangelands”; Ampt and Owen, “Consumer Attitudes to Kangaroo Meat Products.”
600 Culling of iconic animal species is a highly contentious issue that regularly spurs on national debate: From Kangaroo culls in the ACT/NSW to proposed culls of wild brumbies in the high country, fierce debate ensues. For background see Welberry, “Wild Horses and Wild Mountains in the Australian Cultural Imaginary”; Franklin, “Human-Nonhuman Animal Relationships in Australia: An Overview of Results from the First National Survey and Follow-up Case Studies 2000-2004.”
Conservation and restoration initiatives are seeking to create stewards within the constraints of an economic system that demands certain outcomes. The instability of that economic system is made stable through the constant adjustments that landholders make to support conservation and commit to keeping farming in the family. This commitment supports conservation and restoration narratives, but in practice, the idealistic values and realistic possibilities exist in a state of friction.

Fencing scripts

This research suggests that places are being continually made and remade within local ecological conditions by letting wires loose, adding paddocks and fences, or demolishing them completely. The messages within speak to wider discourses on fencing in environmental management. The fence is undergoing changes in both public and private land management scenarios. Ecologists Matt Hayward and Graham Kerley write ‘[F]encing for conservation is an acknowledgement that we are failing to successfully coexist with and, ultimately, conserve biodiversity.’601 The space inside the boundary fence is in no way neutral. Rather, it is ‘actively and continually recreated and maintained’602 in line with shifting imaginaries operating within enduring limits. Fences are being reimagined and repurposed, but further cultural, economic and systemic policy changes are necessary for them to be relinquished altogether.

Environmental fencing has been employed in Australia in three ways. First, to hold back the pressures of ‘feral’ animals and ‘wild’ animals from agricultural regions; second, to exclude stock from fragile ecosystems and watercourses, and third, to create protective enclosures for conservation and reintroduction programs. Within fenced reserves, conservation, breeding and reintroduction projects are underway to support Australia’s remaining small mammal and marsupial populations.

The Australian Wildlife Conservancy and the Arid Recovery Project have both invested extensive resources into constructing and maintaining fenced reserves where reintroduced marsupials are protected from cats (*Felis catus*) and foxes (*Vulpes vulpes*). In 2017 I visited the

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601 Hayward and Kerley, “Fencing for Conservation: Restriction of Evolutionary Potential or a Riposte to Threatening Processes?,” 1.  
602 Instone, “Fencing in/Fencing and: Fences, Sheep and Other Technologies of Landscape Production in Australia,” 373.
Australian Wildlife Conservancy’s (AWC) Yukumarraka Sanctuary and saw first-hand the extent of financial and labour investment to maintain predator proof reserves, often carried out by such private donor-sponsored organisations. In 2018, AWC completed the longest ‘feral cat-proof fence’ at their Newhaven Wildlife Sanctuary in central Australia. Catering specifically to 11 nationally threatened mammal species, the 9,390 hectares of cat-free habitat has captured the imagination of Australians.603

Important ethical outcomes rest on the wire. Hayward and Kerley highlight the politics involved in fencing investment. They observe:

> Australia can afford to build and maintain thousands of kilometres of rabbit and dog fence to protect the viability of pastoralism in marginal lands yet cannot afford to fence out introduced predators from national parks despite having the world's highest extinction rate over the past 200 years.604

Evidently, the argument is more complex that depicted above. Ideas of fencing are strongly entwined with definitions of productivity and social imaginaries.

Today, the ecological implications of fences are understood within complex environmental and social relationships. In parts of the world, apex predators are being re-introduced. Social responses are complex, and the results are startling.605 Along this line, in Australia, long culturally symbolic fences are coming into question. For example, ecological impacts of the Dingo Fence on declining native animal populations are documented, and prominent ecologists are calling for the removal of large fences because of ecological impacts.606 As ecologist Kate Moseby and others write of bettongs (*Bettongia lesueur*) in the Arid Recovery Fenced Reserve in Northern South Australia, sometimes restoration projects can lead to ‘too much of a good thing’ and need ‘overpopulation management plans.’607 Other ecological studies have shown negative ecological impacts resulting from the Dingo Fence. Some ecologists have called from

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604 Hayward and Kerley, “Fencing for Conservation: Restriction of Evolutionary Potential or a Riposte to Threatening Processes?,” 8.

605 For a thorough study on the social aspects of wolf reintroduction into Yellowstone National Park see: Van Horn, “Howling about the Land: Religion, Social Space and Wolf Reintroduction in the SouthWestern United States.”


607 Moseby, Lollback, and Lynch, “Too Much of a Good Thing; Successful Reintroduction Leads to Overpopulation in a Threatened Mammal.” This paper reports on a reintroduction program working so well in absence of predation that they are now navigating the difficult scenario of how to manage an overpopulation of their valued species.
the reintroduction of dingos to be considered, echoing sentiments of reinstating wolves into Yellowstone National Park in the United States.608

Ethical concerns regarding fenced populations are also coming to the fore. ‘Every year’, writes Michael Bode in an article in Australian Geographic ‘there are more of them, the imprisoned population growing, while the wild populations outside dwindle. These are Australia’s conservation fences.’609 Bode describes the gory mutiny against ‘feral’ animals outside the fence. ‘In the long-term’, Hayward and Kerley assert, ‘fences may ultimately prove to be as much threat to biodiversity as the threats they are meant to exclude’, and explain, ‘a new research agenda should arise to ensure that conservation fences do not remain a permanent part of the landscape.’610 This critique operates differently across varying scales, whereby cultural narratives of ownership interact with territoriality of ‘nature.’

In 2007, geographer John Pickard opened a chapter on conservation fences with the sentence: ‘[O]ne of the least endearing characteristics of Australian is our inability to remember lessons from the past.’ He outlines the oft-realised and forgotten troubles with fencing for conservation. Fences must be maintained, and this is costly; restoration programs come with an end date and do not provide a budget for ongoing infrastructure investment. He encourages those erecting fences to ask: ‘1. What is the real objective of the fence, and how do we measure its success? 2. What happens if / when the fences are successful?’611

Fences motivate and script changing relationships with Australian ecosystems. As Instone writes: ‘[F]ences orient us, help us to know where we are, and how to behave.’612 The fluidity of species movements across a topology of space corrodes wire lines. Divisions between conservation and productive land are becoming obsolete. Instone provocatively asks: ‘[I]magine the demolition of the boundary fence ... what would happen? What fears would be let loose? What would fall apart? What would come together?’ 613 What might it mean to uncoil fencing scripts and to pay attention to those relationships, beings and processes with disobedient

608 See Newsome et al., ‘Resolving the Value of the Dingo in Ecological Restoration.’
610 Hayward and Kerley, ‘Fencing for Conservation: Restriction of Evolutionary Potential or a Riposte to Threatening Processes?’, 1.
612 Instone, ‘Fencing in/Fencing and: Fences, Sheep and Other Technologies of Landscape Production in Australia,’ 372.
613 Instone, 371.
habits? What is it to unwind fencing scripts and write alternatives, and importantly, where might we find them?

Soils and ecological processes continue below wire lines and resist conformity to spatial imaginaries and territorial boundaries. The renegotiation of fencing in these three family farms depicts how that which is presented as impermeable through tales of capital and capital rights is in fact scattered with flexibility and negotiation (planned and otherwise). Connectivity becomes paramount in restoration imaginaries, and distinctions between places for ‘nature’ and places for ‘production’ are complicated.
Figure 23: Edge of fenced regeneration plot at Montreal. Source: author.

Figure 24: Natural regeneration after fencing off a paddock in 1960s at Montreal. Source: author.
Figure 25: Kiwitech electric fencing at Millpost. Source: author.

Figure 26: Letting boundary fences fall at Massy farm. Source: author.
The Map

Maps provide opportunities to perceive places with a wider perspective of connectivity. They are incomplete without scale and topography and orientation that suggest ecological processes and encourage systems-thinking. They are also powerful narrators of belonging, of territory, and of imperialism, to be considered and troubled.

Mapping settler-property histories

Maps that focus on people in place help to enrich understanding of context. David Watson recently compiled a historical map of Bungendore based on historical information and old maps (fig 27). Bungendore was first surveyed and laid out in 1837. Joseph Larma planned Bungendore and Braidwood, following a grid pattern popular in the towns at the time. By the 1870s-80s the first land leases were taken up in Bungendore, conditional on land “improvements” and residency. David says that mapping and understanding local histories ‘enriches my life.’ Eventually, he would like to write a book focused on the history of Millpost that integrates the history of the property and the family as a record for the future (fig 28). He encourages ‘talking about your mistakes so people don’t have to make those mistakes.’ David’s experience of farms in the district is that ‘once that you start cutting farms up into smaller portions it’s the beginning of the end of that family farm.’ Neither David nor Harry want to fragment Millpost in the future but have instead discussed forming a family trust that runs the farm.

Old maps of surveys and property leases hold useful information about ecological change and past land use. Property leases, and notes of the ecological characteristics help to ‘get a little bit of a feel for what the landscape was like.’ On David’s map, the properties are marked with italic script that denotes owner and size, and in some cases additional information about landmarks. Notes like ‘rocks’ scribed where the axe quarry is; waterways, and marks of large trees that provided corner markers of properties all help to piece together a picture of the past. However, the family agrees that it is hard to know what the property was like in the past and that there are always gaps in knowledge that they continue to seek in the land and in stories.

Writing Indigenous histories back in

The Watsons are now working to write Aboriginal histories back into property maps. In November 2016 a group of local Ngunnawal and Nambri people came to Millpost to visit a
stone axe quarry and spend time with the family. Together they had lunch, explored the property, shared stories and looked at artefacts. Judith said it ‘meant a lot to us…just the gesture, I think is really important.’ She explained that ‘we’d like to know about our history too’, but that so much of it is unknown. They have now gone through the process of having this part of Millpost formally listed as an ‘Aboriginal Place.’ Harry said that the experience has given him some new ‘perspective and context.’

David points out the significance of the activity to the community, who were ‘so delighted to find landholders who were willing to have Aboriginal people on the land.’ He differentiated it from:

[W]hat’s gone on in the last 50 years where if private land holders found evidence of Aboriginal occupation they would try and destroy it lest there was a land claim and they would lose tenure.

What we did was the opposite, trusting them not to put a land claim in.

Harry is interested in understanding Indigenous land management techniques, though he points out that ‘it is a different situation now, where the main issue is not too much biomass but too little.’ This comment suggests that restoration for present scenarios need to evolve from the past. Instead of re-creating Indigenous fire practices in this modified landscape, Harry’s focus is instead on building real relationships with real people, telling stories and conserving heritage, while basing restoration in present-day social and ecological realities.

Similarly, in the 1980s at Severn Park, Charlie Massy fenced off a section he calls ‘The Aboriginal Hill’, where brush tail spear grass and stone chards were prevalent. Now, under the direction of local Ngaringo Aboriginal senior law-man and friend Rod Mason, he has been able to identify culturally significant sites on the property and protect them. He expresses to Rod that ‘this is your old Country’ and ‘I want to work on Country with you.’ In Call of the Reed Warbler Charlie emphasises that Indigenous knowledge of Country and processes like fire-stick farming ‘are not lost’, rather ‘reside with highly skilled Indigenous people in many regions.’

As discussed further in C1: Telling New Stories.

David’s comment about land claims emphasises the unresolved problems of colonial legal tenure in recognising First Nations territories.

Massy, Call of the Reed Warbler: A New Agriculture and New Earth, 288.
Just how Indigenous territory is recognised within the enduring boundaries of private land ownership is messy. Good-news stories of working together in the contemporary context avoid the enduring issue that sovereign land was taken and never returned. Ecological restoration can nurture interactions that see the land as sacred and build relationships with Indigenous people. Such experiences can help individuals and communities to grapple with inheritance from a place of generosity and partnership, complicated as they remain.

*A permaculture map and ethic*

In 1994, one of the first of only a few broad scale permaculture plans in Australia was developed for Millpost with permaculture co-founder David Holmgren (fig 29). The permaculture design works to integrate what is there at present, and to explicitly articulate the goals of the property inside the boundaries and in relationship to wider ecosystems. The focus on connectivity within the landscape enhances a feeling of management practices contributing to something greater.

The Watsons are focusing on creating a whole-farm ecology of healthy processes, soil retention and habitat inspired by permaculture philosophy. David brought to farming an interest in ‘conservation and repair’ and says it was a ‘permacultural vision of living on the land and doing positive things that got me excited.’ They conceive of elements within a larger system and encourage diversity of practices and of place. Harry explains how this overcomes a ‘philosophical issue’ between ‘sav[ing] a particular species and trying to rehabilitate a landscape’ and ‘dealing with specific threatened species in a fragmented landscape and landscape scale rehabilitation.’

At Millpost, farming takes seriously the uncertainties of the future and the geographical context within regional processes. Harry tells me ‘[W]e can’t change the world. But we can save it.’ The message of diversity and creativity is strong. Harry explains that ‘scientists suffer from the same problems [of] siloed thinking. David says ‘[W]henever we’re faced with doing A or B, my automatic reaction is well we’ll do both, and we’ll do C as well.’ This is evident in their response to agricultural weeds, tree planting and soil retention.

Unlike in conventional farming scenarios, agricultural weeds are not seen as such an enemy. David says:

[O]n the one hand you see them as a threat–there are farms where Serrated Tussock or Lovegrass have taken over and it’s become a bit of a nightmare. On the other hand, we don’t really like using chemicals and there is a whole different philosophy to weeds and that they are sending you a
message and they are helping you make the soil. So, whilst we don’t want them to take over, we’re kind of living with them to a degree, understanding that there are some benefits from the weeds. It might just be that the weeds have forced us to lift our game on grazing management, so in that respect they might have done us a favour.

Attitudes that emerged from place that challenge fixed notions of ‘indigenous’, ‘native’ and ‘exotic’ supports critical environmental studies work. The Watsons are not afraid to enrol introduced deciduous shade trees that they grow in their own small nursery as part of land regeneration. Ash (Fraxinus sp.), Oak (Quercus sp.) and Willows (Salix sp.) are used for particular functions in carefully selected areas on the property closer to the homestead. They plant broad-leaf introduced plants such as rape and chicory to quickly 'stabilise the bare earth on the bank.' They have also established large bands of deciduous (what they refer to as ‘naughty trees’) for particular functions. Today, the roots of these deciduous shade trees: hold onto precious soil; make the homestead area cool and add protection from fires; their cut limbs form guards around growing saplings, and, are bound together to create in-stream fascines to reduce erosion and slow down the movement of water (fig 30).

Charlie also asserts:

I’m not scared to use the odd exotic grass and the odd exotic tree. You know, it’s a modified landscape. This idea of pristine purity and we’ll get back…it’s bullshit. Ecosystems are constantly evolving; humankind is now part of them. Let’s not get hung up on purity concepts.

These places are hugely modified and a drive for practical process over origin is evident. Decisions are made with multiple layers of function, aesthetic and risk.

Footnotes:

617 For example see: Frawley and McCalman, Rethink. Invasion Ecol. from Environ. Humanit. As revisited in C1: Telling New Stories.

618 I came away from Millpost with four oak saplings from their nursery that are now over a metre tall and will one day shade our garden. In 2017, Harry and David came to stay with us in Kyneton when they attended the nearby Bendigo Wool Fair. This research has also forged new connections on a map.
Reinstating landscape scale processes

Restoration of landscape scale soil, water and habitat connectivity expand restoration practices beyond property lines on a map. The trend of ‘re-wetting’ landscapes is growing in restoration ecology and relies heavily on biophysical maps and Lidar imaging.\(^{619}\) Conservation of soil is a main concern at Millpost. Salt scalds from dryland salinity remain despite stock exclusion for over 20 years and channels of erosion slice through parts of the property. The focus on erosion control and cooling the landscape has directed them to improvement of the water cycle—to rehydrate the land and provide opportunities for water to stay on the property.

We walk around erosion gullies and Harry and David show me the innovative erosion control architecture that they have developed with the assistance of Campbell Wilson from Earth Integral.\(^{620}\) Harry says there are things that they would like to do that are hindered by policies and laws that deny property owners the rights to modify waterways, ‘like altering third order streams by building structures [and] bringing in fill.’ Because of the lack of understanding and acceptability of manipulating water, Harry says, it is difficult to discuss, share and encourage such attempts to restore water to the landscape.

At Severn Park, Charlie Massy is also attempting to restore the local watershed inspired by natural sequence farming.\(^{621}\) He says: ‘we didn’t have incised creeks, and most farmers don’t know that. We had great seepages and chains of ponds.’ Charlie says that with the introduction of shepherding in the 1830s the silt loads doubled, then by the 1950s-60s they were three-fold. This loss of water and soil from the landscape is reinforced by stories that Senior Elder Rod Mason tells him about his Great Grandfather. Charlie recounts:

> [W]e’ve got a big lake down here, an eighteen-hectare lake called Buckley’s lake, which is apt’ ‘cause it’s dry most of the time. But Rod’s people’s name for it is lake Binderindowee, and in late 1860s or 1870s, his great grandfather speared a Jabiroo stalk on it, and there were big flocks of Magpie geese, Brolgas, big flocks of blue and yellow budgerigar. Now I’ve seen Jabiroo stalks in

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\(^{619}\) For a fabulous example of using Digital Elevation Models informed by LiDAR imagery (Light Detection and Ranging aerial survey method) to inform wetland restoration (along with diverse historical information and community participation) see Bachmann and Kivisalu, “Gooseneck Swamp Restoration Trial 2013: Project Summary Report.”

\(^{620}\) See https://earthintegral.com/, accessed 12 April 2019.

\(^{621}\) Natural sequence farming considers how a holistic ecological system and particular hydrology worked in the past, and how it works now. It focuses on reducing erosion and slowing the flow of water through the landscape. See Williams, “The Principles of Natural Sequence Farming.” See also www.nsfarming.com, accessed 12 April 2019.
Kakadu, and Magpie geese, you won’t get them anywhere further south, so what’s that telling us about a hydrated landscape? The average Cockie doesn’t understand that through our modification, we’ve just drained this landscape, it’s just so much drier and eroded.

At Severn Park, most of the discussion of restoration attempts centres on connectivity, process and scale (fig 31). We pass through stands of Monaro silver-wattle (*Acacia dealbata*), hickory (*Acacia melanoxylon*), blackthorn (*Bursaria spinosa*), mat-rushes (*Lomandra spp.*) and gruggly bush (*Melicytus dentatus*), finally arriving at a stand of candlebarks (*Eucalyptus rubida*). Charlie tells me of the candlebarks: ‘we were down to about 30 of them in the 80s and now we’re back to thousands. They’re gorgeous and they change colour in the autumn too.’

Climbing the property, we reach metamorphic rock that was cleared of trees in the past. Charlie says, ‘they shouldn’t have touched it, because ridges are where your recharge occur.’ Now the western area is fenced off, and the treeless basalt country and exposed granite higher areas are planted with mosaics, corridors at contours across the ridge and vegetation for function to return. Charlie points to a manna gum (*Eucalyptus viminalis*) and a hickory. ‘What that tells me’, he says, ‘is this was once a gorgeous grassy woodland. So, I’ve just ripped this little knoll to put some species in to get some function back there.’ Support has come from formal conservation schemes like the Upper Snowy Catchment Scheme, and from working with scientific researchers conducting trials on the property.

The nature of planting has changed over time. Charlie explains the shifts that have come with experience:

> [S]ome of these exotic tree breaks my father put in. Others I put in. So, I made all the mistakes. I started too narrow, not realising that you need certain widths so that little birds feel comfortable with the predator edge and all that sort of stuff.622

The final plantings on a granite ridgeline complete a seven–corridor mosaic. He says that despite this effort:

> [W]e won’t heal all those incised creeks and get rid of the salt, and we’re trying to get…we’ve probably put in 50-60 thousand plants but there’s no way we can restore our grassy woodlands because I can’t afford it and it’s not practical, but we can restore function with corridors and

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622 See Lindenmayer et al., “What Makes an Effective Restoration Planting for Woodland Birds?”
mosaics and that sort of stuff.

The current endurance of private property ‘rights’ and neoliberal models of ‘productivity’ reassert that the cost of restoration projects are to be borne by individual landholders, many of whom already have the challenge of operating on marginal land. Thinking at a landscape and catchment scale challenges the idea of ecological processes divided up within private properties, but rather, understands them as flowing between as a public good. It is dangerous for the long-term health of systems and of landscape productivity to overlook the significance of conservation and restoration on private land, and to rely on the good will and sense of place of individuals. Wider respect for the historical and contemporary context within which restoration projects operate help to break down these imagined boundaries.

*Spatial imaginaries*

The compilation, study and critique of maps help to enrich an understanding of spatial imaginaries. Beyond biophysical maps, maps of human histories can contribute to restorative land practices. Restoration and production efforts are integrated both spatially and conceptually. In 2016, ecologists Anna Renwick and Nancy Schellhorn surmised that an either or of ‘[L]and sharing and land sparing represent a false dichotomy’, and that ‘[S]trategies for biodiversity conservation in agro-ecosystems form a continuum between these two extremes.’

Increasingly, ecological restoration projects are working across landscape connectivity.

Maps define conceived ideas of space, territory and belonging and are widely recognised as instruments of power. Graphical representations of space reduce complex processes and stories to seemingly objective documentation of truth in the world, reflecting in geographer Shiloh Krupar’s words: ‘legacies of imperial exploration, resource extraction, colonization, and state control.’ Maps ‘delineate territories, materialise borders, and legitimatize ownership and

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624 For example see Pulsford, Fitzsimons, and Wescott, *Linking Australia’s Landscapes: Lessons and Opportunities from Large-Scale Conservation Networks*; Bradby, Keesing, and Wardell-Johnson, “Gondwana Link: Connecting People, Landscapes, and Livelihoods across Southwestern Australia.” For details on effective strategies for creating connectivity see: Doerr et al., “Does Structural Connectivity Facilitate Movement of Native Species in Australia’s Fragmented Landscapes?: A Systematic Review Protocol.”
control of land, resources, and commodities. The field of critical cartography uses social theory to scrutinise formal constructions of maps as instruments of power. Krupar explores both the genealogies and methodologies of map power, and the ability for counter mapping practices to become forms of resistance and work towards social justice. Practices can lead to ‘learning about subaltern history, marginal voices, and overlooked sites through direct affective experience within the landscapes.” Krupar outlines three forms of activist mapping practice that offer inspiration to restoration practitioners:

[M]apping as a form of protest and argument, such as radical atlases and geopolitical critique maps; mapping as immersive social commentary, including alternative history trails and collective walks that feature marginalised experiences and local knowledges; and mapping for community education and grassroots local organizing, wherein mapping functions as a form of information sharing and process-based participatory learning.

Naming also becomes a political cartography or form of mapmaking that ‘fixes the cultural image, subordinates differences, and radically destroys identities.” Writer and Koori man Tony Birch explains the significance of naming and knowledge in first denying and erasing, and subsequently restoring a presence of Indigenous people to a place. Drawing on work of multiple scholars and writers he articulates that the inability to even recognise that other names exist comes from imperial security silencing unheard voices.

Maps tell stories of layered cultural and environmental histories of a place, while daily movements motivated by restorative ecological practice can rupture literal and conceptual spatial boundaries. Technological advances in mapping technologies now allow for the inclusion of narrative components of place such as personal stories to be presented alongside quantitative scientific data. This ability generates ‘hybrid practices’ such as geospatial storytelling and multi-sensory ethno-cartography. This study suggests that participatory mapping might be employed as a tool to document and enhance ecological literacy and layered

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626 Krupar, 93.
627 Krupar, 95.
628 Krupar, 95.
630 Birch, “‘A Land so Inviting and Still without Inhabitants’: Erasing Koori Culture from (Post-) Colonial Landscapes,” 174. See also Carter, The Road to Botany Bay.
631 Krupar, “Map Power and Map Methodologies for Social Justice.”
local-place connections.\footnote{Unfortunately, this work was beyond the scope of the present study.} Such mapping could challenge colonial boundaries; rupture divisions between seemingly disconnected places, and distort linear divisions born of frontier mentalities.
Figure 27: Extract from David Watson’s recreated map of the Millpost region from land titles in the late 19th Century. Reproduced with permission of David Watson.
Figure 28: Extract of David Watson’s notes on family & property history. Reproduced with permission from David Watson.

Figure 29: Permaculture plan of Millpost, 1994. Photo: author.
Figure 30: Swales constructed from non-indigenous tree branches (fascines) at Millpost. Source: author.

Figure 31: Planting for landscape connectivity at Severn Park. Source: author.
The Photograph

Stories of fences and maps come to life through images from real-world contexts. The coloured photographs above help to construct a story of these places. They depict ideas and locate understanding within the sights and colours and horizons within which they operate. Photographs act as a tool for noticing and reflecting on social and environmental change. As Ecologist Andrew Trant and others explain, ‘historical images have value for ecologists who wish to understand past landscape patterns, ecological and human legacies, and changes in abiotic, biotic, and cultural processes over time.’

Repeat photography assists in monitoring change over time. It is employed as a powerful research tool in long-term ecological research. Ecologists have been conducting formal long-term ecological research projects since their inception in the USA in 1980. Because, as American ecologist Timothy Kratz and others have written, ‘[U]nderstanding long-term ecological interaction at multiple spatial and temporal scales is difficult or, in some cases, impossible without a foundation of long-term observations.’ This is of particular importance in Australia, where ecologies are typified by variation that requires a long-term perspective for any ecological understanding. Australia has a developing network of long-term ecological research projects though has much further to come in both activities and funding to support research.

It is not just ecologists who can benefit from and contribute to a long-term picture. In 2004, Charles Redman and others published a paper in the journal Ecosystems calling for the integration of social science into the long-term ecological research network. They highlighted the role of social factors in environmental change and the importance of cross-disciplinary participation in painting a complex long-term social-ecological picture of change. A political

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634 See: Skovlin and Pacific Northwest Research Station (Portland Or.), “Interpreting Landscape Change in High Mountains of Northeastern Oregon from Long-Term Repeat Photography”; Youngentob et al., “A Survey of Long-Term Terrestrial Ecology Studies in Australia.” A powerful Australian example is: Lewis, Slower than the Eye Can See: Environmental Change in Northern Australia’s Cattle Lands, a Case Study from the Victoria River District, Northern Territory.
635 Callahan, “Long-Term Ecological Research.”
ecology gaze prompts acknowledgement that the act of photographing is in itself one embroiled with territory, rights and ownership; what is missing from historical ‘databases’ also contributes important knowledge about values and power.

Personal family photographs provide opportunities for reflections on ecological change, farming practices and ideas of settler belonging because they are framed and captured and revisited from a particular viewpoint in time and space. This work looked to a humble family album. Family albums convey much about the people, places and perspectives captured and are popular primary research tools in historical studies. As historian Ruth Ford writes, family photo albums of land settlement can be read as ‘both evidence of environmental change and a form of storytelling about the transformation of the land.’

*Photo stories*

I draw here on time spent with the Wilkinsons at Montreal. These reflections come from both venturing out to revisit photo points, and from longer discussions of photographs over afternoon tea on my second visit. Family albums littered with grinning children and adventures on horseback, new farm machinery and property scenery were objects that came to life: first as a guide for storytelling, and second, as living archives. Photos were selected because of particular stories that they drew together, but they are not the only stories that could have been told.

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Bob’s first tractor

Figure 32: Bob Wilkinson’s first tractor circa 1950; one of the first in the Monaro. Source: Wilkinson family album.

A black and white image of a tractor on the back of a truck stands out against the rolling hills in the family album (fig 32). Bob Wilkinson bought his first tractor in 1950. This photograph captures a moment when the machine, the first in the district, was on its way to the 1951 Cooma show for promotion. This photograph triggered reflections about local ploughing history, land-use history on their property, and a trend for expanding technological ‘progress’ in the region.

Cultural norms and industrial promises of unchecked growth are powerful. The Monaro holds rich stories of hard-working men from the high country. The break-your-back working pride continues, often to the detriment of the local ecology. Dunbar expresses ‘I just think it was poor Australia, discovered at the industrial time, which was a tragic time, and that’s why its extinction rate is the biggest in the world.’ Dunbar laments that still for a majority of the sector, the message is one of bigger investments, bigger money and bigger change.

Dunbar tells me about a property in Maffra that recently changed hands and thus changed fate. It belonged to an elderly lady whose family has lived there for generations. They said she was ‘quite well off’ so ‘didn’t need to flog [her] country.’ The neighbours who bought it had ‘big

639 It was also the time of the Enlightenment when science and Royal Societies shaped interpretations.
640 This comment points again to the often invisible but ever-present role of economic structures in shaping what is possible within private land.
machinery’ and were ‘cropping type people.’ In a short time, they had irreversibly damaged the native pastures. ‘[I]t’s amazing,’ says June, ‘how forgiving and tough native country can be if it hasn’t been poisoned or deeply ploughed.’ But ‘once you’ve upended it or once you’ve poisoned it–no.’ Dunbar also tells a story of a neighbour who was always in to tractors. He says that ‘he was just born on the wrong side of the mountain; he should have been born in the Riverine or something.’ He emphasizes the persistence of a culture where ‘the next generation always has to do bigger than Dad’ with ‘round-up (Glysophate), bigger tractors, and bigger gear.’ He attributes this to a cultural condition:

I think whitefellas find it hard to put anything in reverse, or even put it in neutral, like I think it’s not our way. It’s not in our culture. I remember us talking about our neighbours who we are related to through our original ancestor; talking about how we just couldn’t believe what they were doing when they were so big anyway, you know, did they need to be clearing and spraying out another paddock of native country, and my brother said…’they’re just like a ratchet–stuck on one direction–they only know one way to go and that’s more production, more production, more production… I just think in our white culture it just runs pretty deep that you can never have too much and always feeling that insecurity.

Conservation activities threaten such ‘progress’ and offer an alternative way of being with the land.

Histories of ploughed land determine ecological quality and restoration potential. In notes on his expeditions into the colony of New South Wales in the 1820-1830s, Charles Sturt wrote: A country under cultivation is so widely different from one the sod of which has never been broken by the plough, that it is difficult and hazardous to form a decided opinion on the latter.”641 This ‘uncultivated’ land is of great significance ecologically. Remaining un-ploughed and ‘un-improved’ areas hold critical value for the future of native grasslands. Devices like the stump-jump plough, a ‘symbol of Australia’ was one of the most significant land-altering devices in Australia’s history of soil.642

641 Sturt, Two Expeditions Into the Interior of Southern Australia: During the Years 1828,1829,1830, And 1831 : With Observations On the Soil, Climate, And General Resources of the Colony of New South Wales., 19.
642 See Main, Heartland: The Regeneration of Rural Place; Main, “Object in View: A Stump-Jump Plough: Reframing a National Icon.”
Of the 1880s, Hancock states:

It would have been surprising if practical men had failed to observe and lament the spoiling of their pasture. It would have been just as much surprising if they had studied with close attention the soil beneath the pasture and the water in the soil…there was nobody to teach [them].

Evidently the powers of observation were focused elsewhere or silenced under the guise of ‘productivity.’

These days, while ecological knowledge is present, it is not necessarily reaching the farmers or affecting practice. Dunbar blames ignorance more than ill-will. He says ‘[P]eople don’t sort of get up in the morning and saying, ‘I’m going to fuck the environment today’ or ‘I’m going to give stock a hard time.’ The problem is that this ignorance leads to such drastic and irreversible change. ‘That’s the tragedy of the plough’, laments June. That any old farmer can just hook on a plough and change that land forever, with no scientific knowledge. If they were asked ‘what is the make-up of soil?’ they wouldn’t be able to tell you.’ June says that even those who may think they are environmentalists because they do not plough their land are still broad acre poisoning while they ‘don’t understand what they’re poisoning.’

The few paddocks remaining of relatively undisturbed native pasture that have retained some integrity until the present day are at risk of being undone through fast technologies. June tells me that there has been more destruction of native grasslands in the last five years because of the ability through advanced technologies to get to places where the plough wasn’t able to go before, exposing previously safe country. Ill-will sometimes reigns. Dunbar suggests that vegetation removal restrictions have ‘probably created more damage to grasslands than anything because farmers thought…ok we better pull all this now before those rules come in–stuff that they probably wouldn’t have been cleared for another generation.’

Back outside, we cross over a clear land use history boundary between ploughed and unploughed land as we head higher up the hill. We get in and out of the Ute, moving at a place attuned to gestures and storytelling; a shotgun tucked safely at the bottom of the windscreen. Here, we are on our knees observing the intricacies of the species that make up this grassland.

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643 Hancock, *Discovering Monaro: A Study of Man’s Impact on His Environment*, 110.
The colour palette increases, and the ground feels different underfoot - a cryptogram layer crunches in the sun. Dunbar explains: ‘[W]herever it’s like this you never get a heap of those invasives. Wherever it’s been able to keep its integrity its always so much more resilient to the outsiders.’ Looking over the paddocks Dunbar points out areas that have not been ploughed or chemically altered, which he says, ‘still have a bit of the old spirit left in them’. It is this essence of spirit—in the feeling of a flourishing sacred system—that drives much restoration effort.

Lake, Horse, Lady

Figure 33: June Wilkinson on her horse after rain circa 1994. Source: Wilkinson family album.

We look at a faded photograph of June on her horse in the middle of a shallow lake (fig 33). The conversation turns to the range of nesting birds that have visited over the years, and the change in bird species through seasonal fluctuations. Migratory birds including Japanese snipe (Gallinago hardwickii), sea eagles (Haliaeetus leucogaster), and a range of gulls, cranes and other water birds have visited the property. June says that in the past ‘[I]f you closed your eyes and listen you’d swear you were somewhere in the Coorong.’ ‘When we were kids in the 70s,’ says Dunbar, ‘we used to count 70 black swans up there, but [now]; a couple, but they haven’t come back in a big way.’

Dunbar asks if the lake was ever ploughed when it was dry, finding out through the conversation about the history of the property himself. Apparently, the cattle love a special grass that grows in it. Dunbar would obviously like to see cattle kept off certain sections of wet areas, advocating ‘even just a single hot wire just to keep cattle off it for half the summer, to keep the cattle out
of the nesting bird habitat.’ Discussion turns to the endangered local native herb Omeo Storksbill (*Pelargonium striatellum*) that has withstood grazing and still remains. The extent of what has been lost is unknown.

Up on a hill with Dunbar we pass a small stand of the wattle *Acacia melanoxylon*. The local name ‘hickory’ conveys a history of dominance and use. The tree was favoured for its dense strong timber that, according local knowledge, made the best bullock yolks and axe handles, and was named after North American hickory. An article written in 1890 illustrates the diversity of wattle species in the region. It documents the quality of different wattles for their tannic acid concentration, useful for tanning leathers. In particular, *Acacia penninervi* and *Acacia vestita* were favoured. Given how widely the trees were used, it is likely that populations were much greater than today and that a diverse woodland once stood here.644

**Wildflowers in spring**

![Figure 34: June and Bob Wilkinson with a local ecologist monitoring wildflowers. Source: Wilkinson family album.](image)

A faded image of June and Bob with a local ecologist is pulled out of an album (fig 34). This image captures the tenderness with which June lays down a local daisy as the three consider the floral diversity that the Wilkinsons have on their property. This image frames discussions of

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biodiversity, a love for wildflowers, and a caring ethic. At the Wilkinson’s farm, the wildflower diversity has been studied and celebrated throughout the years. As well as a record of what lives on this land at that particular point in time, it is an artefact of appreciation of nature.

June explains that she inherited this culture of loving nature. She remembers her grandmother Emily Mary Barton, Australian poet Banjo Paterson’s first cousin, calling the clearing of native vegetation ‘a massacre of the innocent.’ A book published by her cousin documents family diary materials. Inside is a poem written in 1840 entitled *Wildflowers*:

> Long, long are the hours my love is away
> [...]  
> But I’ve made myself friends of the flowers of the field  
> There are none here to seek them or love them but me  
> And for me all their sweetest perfumes they will yield  
> And display their rich hues for their mistress to see  
>  
> They peep at me smiling wherever I go  
> Thro’ the grass and the boughs in the meadow and grove  
> And the breezes that over the far mountains blow  
> Bring me all their kind whispers & breathings of love

This depiction of love of local ecology narrates another side to stories of desperation to ‘improve’ the Australian land. It reveals local species as ‘friends’, mitigating the isolation of people on farms. With few women in the region, women on farms turned to the natural world for kinship (‘I’ve made myself friends of the flowers of the fields’). The beauty that drove the development of a caring land ethic is embedded within.

June’s caring conservation ethic has obviously had a great influence on the property’s management. She was not alone among isolated women who turned to nature for companionship. For examples of literature that explores the role of women in conservation see Somerville, *Wildflowering: The Life and Places of Kathleen McArthur*; Holmes, Martin, and Mirmohamadi, *Green Pens: A Collection of Garden Writing*. 

197
June holds onto this love and, inspired by her ancestors’ writing and historical accounts, she emphasizes the importance of species diversity in the grasslands. June alerted ecologists to a special daisy that she had come across in a grazed paddock, in a little knoll. It turned out to be the endangered Monaro golden daisy (*Rutidosis leiolepis*). They fenced this area; which June describes is full of ‘beautiful’ ‘little things’ that ‘smell like heaven.’ Adjacent to it they have written ‘Bob and June’s last hurrah.’ June protects this patch fiercely, from both grazing and ecological suggestions to burn. She says: ‘[T]his is my little spot that I’m not going to burn or do anything. I don’t want to hit it with cattle.’

Photographs of wildflowers on the property (along with historical poetry and writing) can also help to understand what may have been lost from the system. As Dunbar says, ‘we might think it looks native, but how many natives aren’t here that should be here? You don’t know how many species are gone and never to be seen again.’ That is where art like this can help, with ecological secrets woven into descriptions of the ‘sweetest perfumes’, ‘rich hues’, ‘grass…boughs…meadow and grove.’ More recently, photography has been enlisted to document spring wildflowers. June unravels a roll at least two metres long of coloured photographs of different species taken in a ‘good year’ by a professional photographer (fig 35). These images, and those yet untaken continue to build stories and relationships with wildflower diversity on the farm. They form archives of the future.

Figure 35: Wildflower photography documents the beauty and diversity on the farm. Source: author.
Kids and bare soil

Two little boys under a year old are bundled up in their pram in the foreground (fig 36). They are the timekeepers for this moment. The background quickly comes into focus and June and Bob reflect on the state of the earth at that time: dry, exposed, hot. For the Wilkinsons, the precipitation of a different approach to management came about during the ‘81 drought when ‘the seasons became a lot more unpredictable.’ No traditional cropping or pasture improvement has occurred at Montreal since. The family have come to understand that exaggerated drought and soil erosion were local responses to inappropriate land management. June explains:

[T]he problem isn’t drought. It’s living on country that isn’t designed to be carrying set stocking. You know, a certain amount of animals—if we could just put them on ice while there is no rain and then put them back. There are periods where the country is exposed and the animals are still on it, it’s shockingly destructive.

Charlie Massy also recounts this lesson, stating that ‘[T]he 1979 to 1980 drought had crept in like a slow-growing cancer’, and that ‘we “new arrivals” in this country have much to learn
from our Indigenous predecessors…One of the lessons is that you can’t ‘beat’ or ‘fight’ a drought but merely react to it while minimising long-term damage.’ Bob’s reaction was to periodically send away or sell stock in order to conserve soil. As a result, says June, ‘our taxation would say that we’d had a very good year so we would have to pay extra tax.’ In this way, the system actively penalised farmers for protecting soil.

The main message elicited from this photograph for June is disappointment in how little things have changed, despite time and trying. Saying ‘that would not have happened to the Country before white man’ she conveys her dismay at the impact of settler history on the land:

[...] it’s the blindness, all that we’re talking about, is all what the Aboriginals knew what not to do and they would have lived for another however many 60 000 years doing what they were doing. I mean it is such an old continent, it wasn’t meant to be ploughed and have hard hooved animals and all the rest. Really–it was just a terrible thing to happen to Australia.

Along this same line, Dunbar describes the changes to the Country as being ‘whiteman-ified.’ He says that despite some ideas, ‘[W]e just don’t know what was here.’ As with each section in this thesis, reflections on ecological changes and restoration expose individuals to confront Australia’s bleak history. June attributes a lack of knowledge and interest to the shame that riddles settler histories of both ecological and social violence. Earlier in the day she states:

I feel utterly ashamed to be quite honest, don’t you? About our pioneers, earlier days, Aboriginal and pasture wise, everything. I cannot feel proud; I can’t feel proud of being Australian.

Today, soil exposure and erosion are things Dunbar avidly avoids. Dunbar runs mostly beef cattle and some Merino sheep. He focuses on quicker rotation with larger mobs of cattle spending less time in each paddock and leaving a longer recovery time for the land. His shift from largely grazing sheep to cattle came about through observation of the soil:

[W]e had dry year after dry years and I just couldn’t stand seeing what the sheep were doing to the country. I always just loved cattle. And it always felt if you have to pour chemical on something constantly for it to survive, I just thought it was the wrong animal to be running in that environment. I’ve always just felt if an animal can go wild in the environment then you’re running the right animal. If an animal can turn feral somewhere well, you’re getting close to the mark, instead of

Dunbar worries that predicted climate extremes will tip this marginal country over the edge. He says that shade might be ‘the difference between being viable and not’ so he is focusing on getting larger trees into the landscape for ecological function, admitting that with function in mind ‘[P]robably the bulk of what I’ve put in wasn’t locally native.’

Deeply sensitive knowledge of the property has allowed Dunbar to develop his own strategies for successful tree planting. He has found that the growth rates are significantly increased when he plants in the boulders, with increased thermal mass, moisture, shelter and rainfall. We crouch down to inspect various rock ferns and gruggly bush that thrive in the cracks in the granite and Dunbar straddles a tree he planted in their shelter. June emphasizes that this was not heavily treed country and places great value on the grassland species:

[T]his part of the Monaro, where we are, is the hardest place to grow trees. It gets the wind through the frost, and it’s not plains for nothing…and so I really think that we have to learn to accept that the plains are not for trees, and just do what we can in amongst the rocks, and where there are trees, then fence them off for regen and stop destruction of any more.

Heather Goodall and Allison Cadzow explain that Aboriginal people of Sydney’s Georges river saw the country as always in flood.647 As multiple generations of farmers develop a relationship with the land here and begin to manage with a long view in mind, the land can be understood as always in ‘drought.’ The title of Rebecca Jones book, Slow Catastrophes: Living with Drought in Australia, conveys how in this vast dry continent, drought is a catastrophe that plays out slowly and stresses over extended time.648 Evidence in the land of historical change reminds farmers that they are not innocent in their involvement in soil loss, nor immune to it.

647 Goodall and Cadzow, Rivers and Resilience: Aboriginal People on Sydney’s Georges River.
648 Jones, Slow Catastrophes: Living with Drought in Australia.
Dunbar takes us for a drive to the top edge of their property seeking the spot where a particular photo was taken over twenty years ago. We park the ute in the shade of an old gnarled gum and walk about twenty metres to the precise location—likely the same path taken by the original photographer. Dunbar looks over the landscape and compares it with the old photograph to consider what has changed in between times (fig 37). The neighbour whose property features has always stocked in a very conservative way, and the condition of his land is something that Dunbar uses to check his own. He points to individual trees and the slope of the hill, connecting the missing and the new jigsaw pieces of the image.

The photograph and the in-situ reflections that it evoked communicate the importance of both social and environmental interactions of neighbouring land managers. This activity brought time to the forefront of consciousness in landscape relationship, assessment and management decisions. It also brought up reflections on childhood and what he loves about living here; something that, for all its challenges, continually pulls him back and holds him and his family on the property.

For families like the Wilkinson’s, who have experience over multiple generations, the disjuncture between farming expectations and physical land capacities grows clearer by the day.
Their aggregated knowledge draws on experience, story and memory; that together influence their relationship with the land. However, in the contemporary scenario this learning is taking place within a context of unprecedented change, making the role of history complicated. I ask Dunbar what he thinks his grandchildren would want to know about the property and the history. He responds: ‘I don’t know. I’m inclined to say the things that I would find interesting but that’s not how it goes.’

Change is constant. From the top of the property, we get a view across the Monaro. ‘I don’t feel complacent about it,’ says Dunbar. There is not one part of the day when it’s not constantly changing. I love it.’

*Photography lessons*

What then, might family albums have to offer reflections on ecological change over time? As ecologist Kara Youngentob and others have found, funding is a key reason for long-term ecological studies to fail.649 Private land managers have great potential to be enlisted in long-term repeat photography on their properties that, as with the growing body of citizen science projects, can assist in ecological noticing in a committed place-based practice.

Yet photographs can also do more. Conscious repeat photography, and reflective revisiting of old photographs both have great potential in cultivating new ways of telling histories and new relationships with place. Personal photographs widen ‘data sets’ and broaden histories. Ford writes that ‘[T]he act of photographing, as with the act of mapping and surveying, is an act of visually possessing the landscape; of creating new meanings about place.’650 This work suggests that *taking* and *revisiting* photographs helps to reconceive of the past, present and future. Importantly, photographic albums have ‘notable absences’ and ‘silences.’ Family albums are less likely to champion stories of hard times or failures, and the conscious elimination of certain periods can make interpretation difficult.651 From a retrospective view, difficult truths still peek through.

651 Ford, 105.
Reimagining technologies for restoration

A focus on objects in the land and change over time helps to narrate changes in mentalities, practices and processes, and point to opportunities for further action. The stories provide different perspectives to those that only focus on a ‘snapshot in time’ particularly important in places with frontier histories. The three objects articulate the significance of historical context—something that is crucial for biodiversity management and best practice land management decisions. These objects continually shape and re-shape encounters and demonstrate that relationships between self, technology and place are in constant negotiation.

Higgs enlists Albert Borgmann’s ‘device paradigm’ as published in his 1984 book *Technology and the Character of Contemporary Life* to make sense of the roles of technology in ecological restoration. Borgmann identifies that the constraining pattern to contemporary life involves the breakdown of things that matter into commodities and machinery; it is this pattern that is technology. A focus on these patterns can, Higgs argues, allow ‘careful identification of the underlying processes’ at play. These patterns can then be subverted through reworking relationships with technology, rather than rejecting them altogether. Borgmann also inspires Higgs’ term ‘focal restoration’, directing activities of enduring matter and meaning. The interpretation and application to restoration practice of this work Higgs writes, ‘depends crucially on things, which are artefacts and processes that make our experience possible.’

The activities and agency of objects in the land frame our worldly relationships. Lessons garnered from each story enable critique of ‘underlying processes’ and depict a possible change in ‘patterns of our lives’ in relation to technologies.

Grazing in the Monaro is a practice that asks one to confront both ecological realities and colonial legacies. The results of changing material practices and ideologies emerging in private landscapes are valuable to rethinking the place of restoration in cultural relationships with land, and ideas of productivity, ‘nature’ and human belonging. This study demonstrates that lines

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654 Higgs, 191.
655 Higgs, 185.
656 This work supports findings of a study by Australian geographers Nicole Graham and Robyn Bartel of innovative private landholders. Graham and Bartel suggest that “narratives of landholders who have worked to align their land use practices with the land itself offer important lessons for the future of treating biodiversity conservation not only as the province of public
typically drawn between people and nature, production and conservation, and past, present and future are not fixed. Instead, innovative and creative responses are developed through place-based experiences over time. Objects in the land are reimagined to enrol them into restorative practices.

The patterns of relationships with tools and modern farming techniques are rapidly developing, at the same time that global markets and climate change are putting new pressures on land production. These interactions threaten to undermine the best of conservative, place-conscious farming and restoration efforts. Agricultural philosophies that work ‘with’ the natural world provide alternatives to notions of dominion and control of natural systems via technological advancement, violence and manipulation, but they are not part of the profit-making vision of large global farming companies. Processes of recognition, reflection and redress underpin shifts in agricultural practices and encourage questioning of agricultural and environmental policy. For long-term health, as Dunbar says, we need all of ‘healthy land–healthy food–healthy people; you can’t have one without the other.’ This sentiment echoes the values underpinning regenerative agriculture including a growing recognition of the importance of native plants to global food production.657

Private land and private land managers are essential to ecological futures. In the interaction of life stories, intergenerational learning and changes in the land we find shifting relationships with place. Stories from these three family properties convey a mix of practical, functional meaning, with ecological care and a deep sense of place. Multi-generational knowledge and memories are critical to ecological restoration possibilities and cultural change. Restoration cultures need to be multiple and expansive to encourage pluralistic, place-based and inclusive approaches. There is an opportunity for the celebration, and possible transfer of local knowledge and stories that connect people with native ecosystems on their properties. Oral history, mapping and repeat photography might have an important role to play.658 In particular,

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658 Recommendations to support positive futures for native grasslands on productive land are presented in: Pearce and Dorrough, “Understanding the Place of Native Grasslands on Productive Land in NSW: Results from Social Research with Private Landholders,” 2016. This report encourages the recognition of the plural values, practices, knowledge types and beliefs
these tools are important in countering ecologically inappropriate ideas about the productive capacity of marginal landscapes that can be re-instilled by market pressures.\textsuperscript{659}

that exist in relationships with native grasslands on private land and advises that policy programs and language cater for this diversity.

\textsuperscript{659} Local knowledge and memory are at risk of being lost. Very few of the participants in the 2016 grassland study had a formal management plans. Also, very few of the studies’ participants had formal successional plans. Difficulties arise when land managers attempt to document their practices as fixed, when in reality, the best practices are those constantly in flux.
Soil: Reflection

On private land, restoration practices are shaped by ecological, social and historical processes that expand well beyond boundary fences. Individual families like those featured in this study can make huge differences to their own properties, but unsupported by market redesign they often do so at their short-term financial peril. In order to seriously support restoration cultures, patterns of engagement need reimagining at a community and policy level. This section expands on these claims by considering local policy and program shifts, neo-liberalisation of conservation, ideas of ‘stewardship’ and the challenges of operating within a changing climate. It finishes with a visit to an example of cross-cultural restoration within The Bundian Way.

Trends in NSW environmental policy

Cultures of conservation and restoration on private land are better understood with knowledge of government policies and programs. Environmental policy analyst David Salt describes how government perception of agricultural lands having multiple values (including environmental) emerged in the 1980s, along with international and national conversations on conservation and sustainability. These conversations were, in part, triggered by drought. In 1983 the Commonwealth Government’s National Soil Conservation Program was born. A culture of knowledge exchange between scientists, community, farmers and government emerged, supported by extensions officers and farm visits. Yet there remained a comparative lack of government investment and support for farmers in Australia compared with international examples. Salt exclaims:

[A]t the end of the 1980s, the Australian Government wasn’t supporting farmers to the same degree as in the United States or the EU, and there was little trade protection on offer. The Australian Government simply didn’t have the available resources to protect and subsidise agriculture in the manner in which agriculture was supported in the EU and the United States. In Australia’s case, it wasn’t a matter of attempting to wean farmers off existing support. Because there was little existing

support in Australia, there was no pool of funds available.661

Between 1990 and 2013, AU$6.5 billion has been spent on natural resource management programs through a range of mechanisms from raising awareness and changing attitudes, to building new institutional capacity, to direct payments for services.662 Incentivisation, for example, involving changing stocking regimes around high value native grasslands, has been critiqued as dangerous, as they establish the expectation for ongoing payment for aspects of the properties that are now seen as ‘services.’663 Over the years, Australia’s agri-environment policy:

moved the emphasis from empowerment to targeted grants focused on specific environmental assets. It switched from building adaptive capacity and raising awareness, which is extremely hard to quantify and measure, to a focus on investing in specific actions on definable things. It moved from cultivating an ethic rooted in collaboration, sharing, and volunteerism to a culture of benefit–cost analysis and fee for service.664

Lethargy over program and investment change is reported for practitioners, scientists and bureaucrats.665

Today, Australia spends approximately AU$280 million dollars on ‘agri-environment’ or ‘natural resource management’ schemes each year and these programs are responsible for supporting conservation and restoration on private land. Both bottom-up approaches and top-down approaches have been trialled, with varying success for ecological and social outcomes.666 For one program, The Environmental Stewardship Program, of which the Box Gum Grassy Woodland Program is part, ‘land managers were empowered and funded to be

661 Salt, 96.
662 Salt, 98. See also Patrick, Barclay, and Reeve, “If the Price Is Right: Farmer Attitudes to Producing Environmental Services.”
666 WOPR (Greening Australia) is an example of a ‘bottom-up’ program that works from farmers’ practices, whereas the Environmental Stewardship Program is considered ‘top-down’. For program details see: Greening Australia, “Whole of Paddock Rehabilitation.”
recognised as environmental stewards.’ 667 Across New South Wales, Queensland, and South Australia, 297 land managers ‘were approved by the Commonwealth to implement (up to) 15-year conservation management plans over 56, 527 hectares of private land.’ 668 The program required farmers put in bids for service provisions thus pitching them against one another and subsuming cultural relationships and environmental practices within a market-based system. 669

A series of conservation and restoration payments for farming schemes have operated in New South Wales through State and Commonwealth programs since the 1980s. In review, Salt exclaims: ‘the bottom line is that agri-environment schemes in Australia have not improved biodiversity or reversed the ongoing degradation of land and water resources.’ 670 Their legacy instead, is a culture change that potentially hinders positive environmental action and promotes a language and a values-system based in neoliberal approaches to conservation.

‘Neo-liberalisation’ and ‘stewardship’

Particular policies and actors underpinned by economic rationalism have resulted in the denigration of government involvement in protecting both environment and public goods. Neoliberal approaches to conservation attempt to reconcile capitalist economic systems with environmental management and care and have been met with concern from the social sciences and humanities. 671 Associated with this move are modernist responses to environmental ‘problems’ as ones to be solved with ever-greater reliance on ‘technologies’. 672

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668 Burns et al., 37.
669 Burns et al., “The Environmental Stewardship Program: Lessons on Creating Long-term Agri-environment Schemes.” It has, indeed, ‘been suggested that governments were introducing MBIs as a way of controlling farmers’ behaviour Salt, “A Brief History of Agri-environment Policy in Australia: From Community-based NRM to Market-based Instruments,” 101. Stresses associated with market based and risk-assessment cultures are reported to effect volunteer communities associated with the Landcare movement.
670 Salt, “A Brief History of Agri-environment Policy in Australia: From Community-based NRM to Market-based Instruments,” 92. Agri-environment schemes pay farmers to manage for improved environmental values (such as habitat, soil and water quality) in agricultural areas. See: Ansell, Gibson, and Salt, “Introduction: Framing the Agri-Environment.”
672 This shift can be described as shifting from cultures of ‘care’ to cultures of ‘control’, as defined by Andy Sterling: Stirling, “Emancipating Transformations: From Controlling the Transition to Culturing Plural Radical Progress.”
There exists an increasing critique of ‘neo-liberal’ conservation practices and projects, where market-based marriages between conservation and development are charged as a new form of frontier territoriality. Anthropologists Jim Igoe and Dan Brockington present an argument for understanding local historical context for critique of neo-liberalisation of conservation where ‘neo-liberalisation involves the reregulation of nature through forms of commodification’, which, in turn ‘entails new types of territorialisation: the partitioning of resources and landscapes in ways that control, and often exclude, local people.’\(^673\) Within such a framing, they assert, ‘conservation can be achieved without addressing the difficult and systemic inequities and power relationships that are inextricably linked to so many of our global environmental problems today.’\(^674\) To environmentalists, this is of great concern.

Geographers Ben Cooke and Katie Moon warn that ‘[I]ndividually-targeted MBI [Market-based incentives] programs may be especially problematic for private land conservation amidst rapid demographic change in rural regions, potentially exacerbating ecological fragmentation and reducing collaborative management between landholders.’\(^675\) Cooke and Moon reinforce the concept of ‘stewardship’, arguing that ‘significant potential exists for re-appropriating the concept of “environmental stewardship” in private land conservation policy-making to call attention to landscape-scale ecological function.’\(^676\) They argue for the use because of its ability to connect public good with private responsibility and benefit. However, by enrolling land holders on marginal land as ‘stewards’ it puts the onus on individuals to care for ecological systems while often overlooking the systemic failure by governments to value ecosystems as common goods worthy of protection.

In recent times, ‘stewardship’ seems to have become a panchreston worthy of critique. The language of ‘stewardship’ runs supposedly contra to language of financial benefits of ‘nature’. Environmental stewardship is a phrase applied to many different peoples and contexts. A notion of ‘Earth stewardship’ is proposed as a remedy for global climate catastrophe, through which

\(^{673}\) Igoe and Brockington, “Neoliberal Conservation : A Brief Introduction,” 432.
\(^{674}\) Igoe and Brockington, 434. See also McAfee, “Selling Nature to Save It? Biodiversity and Green Developmentalism.”
\(^{676}\) Cooke and Moon, 154.
people are ‘reconnected to the biosphere.’ In Australian environmental management, ‘stewardship’ is employed to describe: pay-for-service government greening programs such as the ‘green army’; activities of ‘rural amenity migrants’ on peri-urban conservation properties; environmentally conscious or ‘regenerative agriculture’; pro-environmental land management programs; and Indigenous ranger programs, ‘Caring for Country’ initiatives and Indigenous cultural practices. The presentation of non-Indigenous individuals as the rightful stewards of a place can be read, geographers Noel Castree and Lesley Head argue, as responding to Aboriginal expressions of special connections to land.

In doing so, ‘stewardship’ is enrolled in complex assertions of power and territoriality. Assertions of stewardship overlaid onto existing relationships can result in the exclusion of, particularly Indigenous, others.

While terms can evolve and be adopted by communities that they are attributed to, it is worth remembering their lineages. The concept of stewardship originates from a strongly Judeo-Christian belief system which promotes man’s dominion over the natural world. As Bill Devall and George Sessions write in Deep Ecology (1985), even the ‘wise stewardship position…still incorporates the premise of instrumental rationality - the narrowly utilitarian view - of natural resources primarily for human use.’ Philosopher Jennifer Welchman explains, ‘environmental stewardship is not a full-blown normative theory, a rival to utilitarianism, virtue ethics, contractarianism or Kantian deontology’, rather, it ‘is a role that

677 Chapin et al., “Earth Stewardship: Science for Action to Sustain the Human-Earth System”; Folke et al., “Reconnecting to the Biosphere.”

678 See Cooke and Lane, “How Do Amenity Migrants Learn to Be Environmental Stewards of Rural Landscapes?”

679 See Massy, Call of the Reed Warbler: A New Agriculture and New Earth; Burns et al., “The Environmental Stewardship Program: Lessons on Creating Long-term Agri-environment Schemes.”


682 Castree and Head, “Culture, Nature and Landscape in the Australian Region,” 1256. Contested ideas about Indigeneity negotiated through land relationships is considered in Trigger et al., “Ecological Restoration, Cultural Preferences and the Negotiation of ‘nativeness’ in Australia.”

683 Note: Lynn White Jr. promoted an alternative Franciscan tradition for earth care. This perspective is considered in Van Wieren, “Restored to Earth: Christianity, Environmental Ethics, and Ecological Restoration.” For lengthier discussions of the interpretations of stewardship in Christianity and environmentalism see: Callicott, “Genesis and John Muir”; Warde, “Christianity and the Environment: The Lynn White Controversy.”

‘individuals adopt in certain contexts...constrained by one’s broader normative commitments.’  

Evidently, terminology and scientific concepts carry with them certain knowledge-politics that embed themselves within local social and political contexts. It is my contention that in practice there can exist no such thing as ‘global’/ ‘Earth’ stewards, but only local, plural, place-based ones. Bringing forth a focus on history and ecology helps to call out this fact and articulate local differences that counter the homogeneity of globalising tendencies.

**Legislative limitations**

State environmental legislation in New South Wales is wildly insufficient to slow ecological destruction on private land. Enduring mentalities of private land rights lead to drastic outcomes. In July 2014, farmer Ian Turnbull shot and killed NSW environment officer Glen Turner who was investigating allegations of illegal clearing on Turnbull’s land. Instead of holding Turnbull accountable and supporting existing environmental protection, National’s MP Andrew Fraser blamed the murder as being ‘brought about by bad legislation.’ A series of political moves following this event worked to massage native vegetation laws to the wants of certain farmers. This process went directly against recommendations of an expert panel, resulting in the resignation of leading ecologist Hugh Possingham. Geographers Robyn Bartel and Nicole Graham provide a thorough overview of the changes in NSW native vegetation legislation and review, which they characterise as ‘a weakening of the protections afforded, which have further undermined a system already suffering from administrative deficiencies.’ Farmer demands for loosened environmental controls are, Bartel and Graham argue, ‘based on the legal and cultural discourses of property that dephysicalise legal relations between people and place,

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685 Welchman, “A Defence of Environmental Stewardship,” 308.
688 The trend of the National Party (Australia’s rural landholders conservative political party) to exaggerate private property rights over environmental limitations continues today. Ironically, for a party that claims to represent those who rely directly on the environment for their livelihoods, they pitch themselves directly against the environmental movement.
transforming them into categories of abstract and predominantly commercial rights’ and that these ‘foster a vocabulary of entitlement to land as a civil and political right.’

689 As Muir states:

[I]n 1997 the New South Wales Government introduced restrictions on the clearing of native vegetation. Landholders were outraged because they believed the growth of woody native vegetation was unnatural. They grew because of the suppression of Aboriginal burning and the degradation caused by graziers in the past. Landholders at Bogan formed the Rural Community Survival Group and locked out government native vegetation inspectors from their properties. To them, illegal clearing is not degradation, it is restoration.

690 Thus, contested ideas about ecological processes and ‘restoration’ in ecosystems can be politically purposed in order to play into the assertion of individuals’ property rights.

Active restoration efforts of farmers offer resistance to a culture that legally sanctions environmental destruction. 691 This occurs at a time when farmers are increasingly challenged by environmental extremes. Despite troubles with regenerative agriculture and limitations of ecological outcomes in productive land, particularly in the Australian context, the ethics and place-based focus of such practices offer a refreshing antidote to narratives of domination, control and self-righteousness. Decisions made through daily farm practices and connection to place, and active restoration programs, can resist neoliberal and homogenising programs, politics and practices, whether or not that is the intention of the land holders.

Those programs which begin from personal experience, engage in individual relationships, and foster innovation, creativity and unknown outcomes will respond to practical needs while feeding a caring place ethic. Yet at the individual level, resistance can be tiring, cumbersome, and disqualify landholders from financial support, which remains open to those happy to play the system for financial gain. Indeed, ‘[L]andholders who cleared land under earlier more permissive regimes may also benefit from funding for tree planting and fencing of riparian zones that are available to all,’ assert Graham and Bartel. They alert readers to the concern ‘for those farmers who have either worked hard to retain vegetation in spite of incentives (and at

689 Bartel and Graham, 268. Since this paper has been published further legal challenges to the efficacy of the current Act have been through proceedings, resulting in weaker protection again. See Slezak, “NSW Laws That Make Land Clearing Easier Reinstated by Berejiklian Government.”

690 Muir, The Broken Promise of Agricultural Progress: An Environmental History, 84.

691 This argument directly counters criticism of restoration as ‘green-lighting’ development.
times proscriptions) to do otherwise and/or have reinstated areas without government assistance.”

Climate change and agricultural practice

Restorative action and care for soil is more urgent in the face of changing climates, under which extreme weather, ecological decline and market pressures all have the potential to wreak havoc on farms. The IPCC Fourth Assessment Report concludes that Australian agriculture and the natural-resource base on which it depends has significant vulnerability to the changes in temperature and rainfall projected over the next decades to 100 years. A 2008 article by agricultural scientist Mark Howden and others considers the likely impacts of climate change specifically to Australian livestock systems. The authors argue the need for ‘systemic changes in resource allocation’, ‘such as targeted diversification of production systems and livelihoods.’ Graham and Bartel remind us that, ‘[T]he adaptability of environmental regulation will become increasingly important as climate change becomes more apparent in the landscape.’

Australian native pasture plants retain the capacity to adaptation to some climate extremes, more so than in parts of the northern hemisphere. In part, diverse and strategic breeding systems are the reason that some Australian native plants have survived the drastic impacts of European agriculture. Diversity in species and strategies will result in ‘the best ability to cope with the changing climate.’ However, ecologists Ian Woodward and Line Rochefort conclude that ‘eastern Australia will be very sensitive to environmental change because precipitation currently limits vegetation phenology and productivity over much of the region.’ As

693 For a thorough study of pressures to rural farming communities in Australia see: Barr, The House on the Hill: The Transformation of Australia’s Farming Communities.
694 Stokes and Howden, _Adapting Agriculture to Climate Change: Preparing Australian Agriculture, Forestry and Fisheries for the Future._
695 Howden, Crimp, and Stokes, “Climate Change and Australian Livestock Systems: Impacts, Research and Policy Issues,” 78; Stokes and Howden, _Adapting Agriculture to Climate Change: Preparing Australian Agriculture, Forestry and Fisheries for the Future._
697 Mitchell, Norman, and Whalley, “Use of Functional Traits to Identify Australian Forage Grasses, Legumes and Shrubs for Domestication and Use in Pastoral Areas under a Changing Climate,” 84.
698 Woodward and Rochefort, “Sensitivity Analysis of Vegetation Diversity to Environmental Change.”
rangeland scientist Geoffrey Pickup asserts, desertification of the rangelands comes from the ‘unsustainable land use and the impact of European settlement’, then ‘exacerbated or triggered by climate variability’ meaning that ‘[P]olicy responses require that the whole issue of sustainable land use be addressed rather than climate issues alone.’  

699 It is the responsibility of restoration cultures to push for policy responses as much as for practical action.

There is a strong belief demonstrated by farmers in native grassland resilience.  

700 However, it is uncertain whether the remaining native ecosystems will continue to hold in the face of unprecedented change. Research exists into predictive impacts of climate change on Australian pastures by region.  

701 Yet predictions are marred by uncertainty.  

702 The belief of native grassland resilience provides important hope to landholders but may work to repress urgent questions of rural futures. A central message coming from these stories is of families working hard to enable flexibility, reactivity and space for movement. Wider perspectives on resilience that rely on diversification, flexibility and adaptability expand opportunities for those families described above. Each family tries their best to ‘work with nature.’ As Massy argues, this is going to become even more crucial in the face of climate extremes.  

703 Between 1890 and 1910, the agricultural project was seen as having restorative potential for both settler-influenced environmental degradation and social challenges of inland Australia.  

704 As Muir explains, closer settlement, dam building and soil-conservation programs were meant to address the problems caused by ‘previous’ agriculture. As he writes, ‘[A]griculture would become a corrective project again…solving problems the previous system of agriculture has caused.’ Muir continues, ‘[T]he founding period of scientific agriculture was marred by class tensions, corruption and political and cultural desires that rejected ecological limits.’  

705 Certain

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699 Pickup, “Desertification and Climate Change- the Australian Perspective,” 51.

700 This was conveyed in all grassland studies.


702 See Hughes and Westoby, “Climate Change and Conservation Policies in Australia: Coping with Change That Is Far Away and Not yet Certain.”

703 Massy, Call of the Reed Warbler: A New Agriculture and New Earth.

704 Muir, The Broken Promise of Agricultural Progress: An Environmental History, 81.

705 Muir, 105.
aspects of Australian agriculture have not swayed far from this picture, as evident in enduring environmental management catastrophes and myths of agricultural progress.\textsuperscript{706}

In March 2017, the same week that I first visited the Monaro, the then Prime Minister of Australia Malcolm Turnbull announced ‘Snowy 2.0’; an upgrade promising 2000 megawatts of energy and 175 hours of large-scale energy storage.\textsuperscript{707} It is another wave of modernist performance, paraded in the face of pressing environmental limits. We hear familiar calls that new, bigger, better, more efficient agricultural practices can be the absolver and healer. Simultaneously, missionaries of ‘regenerative agriculture’ claim that clean and ethical food can be produced while also ‘healing nature’.

Regenerative farming approaches continue the trans-Pacific dialogue on soil-knowledge between the USA and Australia that was introduced earlier. Adaptive management and regenerative agriculture (led by Alan Savory and his holistic management model) have exploded amidst smaller farming-and ‘back to the land’ movement in regional south-eastern Australia. While the definition and boundaries of regenerative agriculture are still debated (much like those of ecological restoration), the practice is underpinned by the following four guiding principles: ‘progressively improve whole agroecosystems’; ‘create context-specific designs and make holistic decisions that express the essence of each farm’, ‘ensure and develop just and reciprocal relationships amongst all stakeholders’, and ‘continually grow and evolve individuals, farms, and communities to express their innate potential.’\textsuperscript{708} Initial studies into the ecological benefits of regenerative grazing practices show positive results, though social factors of awareness, education and landholder and wider societal beliefs have been identified as barrier to wider adoption.\textsuperscript{709}

Savory’s narrative follows Jackson’s idea that ‘[T]he dualism between the world of wild biodiversity and agriculture does not have to be. There does not have to be a sacred and a profane on our earth.’\textsuperscript{710} The phrase ‘New agriculture’—part of the title of Massy’s book—is a

\textsuperscript{706} For example see: Connell, \textit{Water Politics in the Murray-Darling Basin}; Muir, \textit{The Broken Promise of Agricultural Progress: An Environmental History}.
\textsuperscript{707} Snowy Hydro Ltd., “Snowy Hydro 2.0.”
\textsuperscript{708} Terra Genesis International, “Regenerative Agriculture.”
\textsuperscript{709} Ogilvy et al., “NESP-EP: Farm Profitability and Biodiversity.”
\textsuperscript{710} Jackson, \textit{Consulting the Genius of the Place: An Ecological Approach to a New Agriculture}, 44.
phrase with a lineage back to Leopold. So too is the notion of health, being in Leopold’s words, ‘the capacity of the land for self-renewal.’ Massy argues that his fifth ‘landscape function’ the ‘role of the human-social’ has been too much overlooked in existing regenerative agricultural models. Influenced by his close relationship with local Ngaringo Aboriginal senior law-man Rod Mason, Massy argues for unravelling elements of settler agricultural land-based narratives and writing people into healthy relationships with the non-human world. This demonstrates that potential for locally-based regenerative agriculture can be a powerful part of the recuperative project.

Still, ill-fitting social imaginaries remain. Muir writes that settler Australian have understood their land as ‘“mongrel country’, rather than a functioning ecosystem poorly adapted to the expectations of Western agriculture.’ If we turn this around—presenting Western agriculture as poorly adapted to the confines of Australian ecologies—then opportunities for agricultural practices to evolve are brought to the fore. However, at the same time, global agricultural markets and fast developing technologies pose new threats to these fragile ecosystems in the contemporary era. Shiva describes the significance and urgency of food systems in the Earth’s future. She explains:

[T]here are two distinct futures in food and farming. One leads to the regeneration of our planet, our soils, our biodiversity, our water, our rural economies and farmers’ livelihoods, our health, our democracy. The second leads to collapse of the plant’s ecosystems and of socioeconomic systems that sustain rural communities and society, with the speculative, unstable financial system controlling the future of food and farming. The future of diverse species, our common humanity and our daily bread depends on which road we take.

While regenerative agricultural practices are no doubt a step in the right direction, a sweeping acceptance that biodiversity and production can co-exist without compromise can bury the fact that all farming practices involving hard hooves pressure Australian ecological systems. There is limited rigorous study of the ecological and social outcomes of ‘regenerative farming’ in the

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711 Jackson, 30, 125.
712 Massy, Call of the Reed Warbler: A New Agriculture and New Earth.
713 Muir, The Broken Promise of Agricultural Progress: An Environmental History, 184. This was happening simultaneously in both Russia and the United States, see Muir for more detail.
Australian context, though interest is growing. \(^715\) Proponents of regenerative farming evoke language of ecological restoration. By simplifying complexity or removing local context and history, they too are at risk of promising a solution to a new, ‘previous’ agriculture, while simultaneously reinforcing ideas of territory. \(^716\) There remains room for plural, innovative locally-informed practices to emerge. The dual evolution of regenerative agriculture and ecological restoration presents an opportunity for the fields to work together and learn from one another.

In his 2003 book *Nature by Design*, Higgs also draws on a metaphor of a fork in the road. He predicts that, for ecological restoration: one direction pursues the technically proficient, top-down professionalisation of the practice (technological restoration); the other emphasises ‘the importance of building communities in relation to natural processes and patterns’ (focal restoration). \(^717\) This study demonstrates that both versions of ecological restoration are enrolled in private productive land relationships in Australia, and that the relevant policies and schemes have a long way to go to encourage ‘focal’ practice.

Remembering the hard-fought battles to protect soil and country and living through the impacts of drought on overgrazed land are two aspects that those in the region cannot afford to forget. Time and again, the ecological limits and legacies of settler-colonial cultures push back against production. The long-term health of soil continues to motivate landholders, today with the added stress of climate extremes. ‘The soil is getting cooked’, Judith Turley tells me at Millpost, ‘and we haven’t got much soil.’

**Restoring Yamfields**

As a final reflection on *Soil*, I look to a project where Indigenous knowledge and practice and Western science are working together to restore culturally and ecologically significant sites in the region.

The Bundian Aboriginal Women and Yamfields (AWAY) project, part of *The Bundian Way*, provides a strong example of the multiple benefits and cultural outcomes of ecological

\(^{715}\) See Ogilvy et al., “NESP-EP: Farm Profitability and Biodiversity.”
restoration. The project is a collaboration between the Aboriginal Land Council in Eden, Natural Regeneration Australia and Greening Australia with support from Kosciuszko to Coast. The yam daisy is a significant food source for much of south-eastern Australia’s Indigenous people, carefully managed by the women. The aim of the project is to restore healthy populations of yams daisies (Microseris lanceolata, locally known as Garngeg or Nyamin, and known in Victoria as Murmong), while re-enlivening culture and tradition of ancient relationships within Travelling Stock Routes (TSRs) in the southern Monaro.

TSRs run through New South Wales. They are filled with significant cultural (pre and post invasion) and ecological values. Recent studies have confirmed that many TSRs followed existing traditional Indigenous pathways, suggesting that these sites carry particularly significant histories and practices. It also suggests that TSRs are sites of passing on of knowledge by Indigenous guides and trackers, and that they resulted, in part, from the role of Indigenous people working in the pastoral industry. The pathways are integral to histories of grazing in the Monaro. Traditionally, they were the only way to get stock to markets and are still used by some today. They were also relied on throughout Australia in times of drought, becoming ‘an indispensable part of the Australian pastoral industry’, providing land outside of private property boundaries that continued to be available to graziers after the snow leases ceased. Partly for this reason, they were never cleared. They were also never ploughed (unlike much of the surrounding country), and, though often heavily grazed, always had periods of rest. As such, they retain significant ecological value and act as refuges for threatened species and communities. Today the histories and heritage value of both Indigenous and non-Indigenous cultural values (which includes physical heritage such as stone huts) are at risk of being overlooked and forgotten. The AWAY project focuses

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718 The Bundian Way is an ancient Aboriginal pathway running between Eden on the NSW south coast (just south of Bermagui), and Mount Kosciuszko (resting over the Monaro). The route of the Bundian Way was determined after a process of historical research, walking, consultation and physical survey. See Blay, On Track: Searching out the Bundian Way.

719 Contra Sylvia Hallam, it is now arguable that cereal farming was present in Australia for over 30,000 years.


722 Jones, Slow Catastrophes: Living with Drought in Australia, 252.


724 Hazel, “Personal Communication.”
on restoring both ecological and cultural heritage. It responds to the historical obstructions to relationships between Aboriginal Women and yams born of multi-layered mistakes, misunderstandings and denial of Aboriginal people’s presence and practices.

In February 2015, in the early moments of this project, I was welcomed out to Bombala to meet with Monero Yuin woman and knowledge holder Aileen Blackburn, and Annabel Dorrough from Natural Regeneration Australia. Aileen and Annabel work on the AWAY project. Together, we went to visit their yams that have been planted amidst the old travelling stock route. Aileen, with a traditional digging stick in her right hand, and a plastic water bottle in her left, leads us over fences and through the grassy woodland to the yam field. The intricately carved timber is a way-finder, guiding us through the dense scrub to the plots where yam daisies have been planted.

Aileen and the other women practice traditional digging and thinning, within precisely located quadrats, marked with a geographic positioning system. Many moments of contradiction and confluence signalled that the past was not being re-created, but instead was being honoured through relationships, practices and beings that gave important interactions and processes renewed life in the present. Like Verran writes of Yolgnu and Western science burning practices, the restoration of yam fields provokes ‘postcolonial moments’ marked by disconcertment experienced when different knowledge systems coexist in practice. Sociologist John Law and Wen-yuan Lin express the fruitful possibilities of moments of such disconcertment, which can be used as a tool to ‘move beyond the limits of Western knowledge traditions.’ Bright plastic squares and measuring tape document ancient relational cosmologies. The reinstatement of yams performs ‘collective memory and evaluative witness quite differently, but equally they carry a past into a future.’

There is great significance in these women being welcome again on this old travelling stock route. Aileen’s mother and Nan were considered trespassers on the land that, for generations, had been the site of significant women’s business. Aileen says of recovery: ‘[W]e need to take

725 Verran, ‘‘A Postcolonial Moment in Science Studies: Alternative Firing Regimes of Environmental Scientists and Aboriginal Landowners,’’ 3; Law and Lin, “Cultivating Disconcertment.”
our elders and take your children and go through that healing process ourselves.’ She considers Yams to carry holistic healing capacity and wellbeing when given some ‘TLC’, just as her Nan taught her. She says of the project: ‘To be able to do what my elders have done on that same bit of country which hasn’t been cared for in a cultural manner for near on 200 years is unbelievable.’

In the restoration of the yam daisy is a broader practice; a recitation of complex entanglements in the Aboriginal notion of the term ‘country’ that have, and continue to be, denied by colonists and later settlers. This story demonstrates the ways in which practical aspects of ecological restoration (jumping fences, working together, valuing cultural histories) form positive and political contributions to local communities that allow individual histories to endure and where appropriate, to work together and be shared. The TSRS, like restoration cultures and like stories, break through fixed boundaries of space and time. Beyond this project, the significance in value and the production opportunities of ‘traditional’ Aboriginal food plants are beginning to make it into the mainstream. Fitting, given Indigenous Australians may have been the world’s first bakers.

Since his publication of *Dark Emu, Black Seeds: Agriculture or Accident?* Bruce Pascoe has become a pin-up advocate of recognition of Aboriginal farming and is now involved in projects that invest in their futures. In December 2016, a crowd-funding ‘Pozible’ campaign *Grow The Seeds – Gurandgi Munjie*, raised $26,380 for growing and harvesting Kangaroo grass (*Themeda triandra*) and native millet (*Panicum decompositum*). A fifty-dollar investment bought donors an invitation to a planting day at a murnong (yam daisy) plot. The *Gurandgi Munjie Food Company* on Yuin country has been growing murnong yams since 2011, aiming for commercial production. The future of the ‘bush foods’ market is evidently of great interest and possibility. Pascoe asserts ‘[T]hese plants only need the available moisture that Australia provides. They only need the available fertility and they’re adapted to Australian pests.’

728 Ferguson, “Women Working Together to ‘Bring Aboriginal Yams Back to the Bush.’”
730 Pascoe, *Dark Emu: Black Seeds: Agriculture or Accident?* Two other books that have shifted perspectives in agricultural thinking are *The Bush*, by Don Watson (2016), and *Call of the Reed Warbler: A New Agriculture, A New Earth* by Charles Massy (2017): Watson, *The Bush*; Massy, *Call of the Reed Warbler: A New Agriculture and New Earth*.
732 Fitzgerald, “Project to Harvest and Mill Kangaroo Grass Aims to Encourage Farmers to Adopt Native Australian Crops.”
encourages Australian farmers to grow native crops for food and for fodder and to look to Indigenous peoples for alternatives to economic, cultural and agricultural cultures for alternatives to extractive, degrading systems. Similarly, Muir writes that ‘[T]he belief that Aboriginal people had nothing to offer to European agriculture and its adaptations to Australian environments has been a social and ecological loss.’ Indigenous practices and connections have more than knowledge and technique to learn from. As with ecological restoration projects found in *Soil*, the material aspects of the practice are just one element of restorative cultures.

*Soil is exposed by hooves and eroded by water, incised with steel and inoculated with memories. Though housed within boundaries of private land, soils and ecological systems are urgently needed public goods. Places are reimagined and definitions and spatial boundaries fray as relationships mature and climate change forces a rethink of ‘adequate’ responses and of who is responsible. We now visit the edge of the continent where European practices arrived, to consider a restoration story playing out under the watchful gaze of Gulaga (Mt Dromedary) (fig 38).”

Figure 38: Oswald W.B. Brierly - Journal of a visit to Twofold Bay, Maneroo, and Districts beyond the Snowy River, Dec. 1842 to Jan. 1843. Source: State Library of NSW Manuscripts, Oral History and Pictures Catalogue.

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733 Muir, *The Broken Promise of Agricultural Progress: An Environmental History*, 93.
Plates 3 & 4 over page show: 3: Harry Watson as a tree in a tree guard made from willow branches; a local rock fern in a granite boulder; Dunbar Wilkinson straddling a paddock tree he planted in the protection of the granite, and local gruggly bush with delicious berries; 4: A low-impact industrial sheep (Severn Park); pipes of the hydroelectric scheme in 2017; the contrast between unploughed (foreground) and ploughed (background) paddocks (Montreal), and stone artefacts (Millpost). Photos by author.
B3 | Sand

Figure 39: Location of field site, Bermagui, NSW. Source: author.
Background to research

I leave the Monaro and descend through the mountains to the coast. It’s a different route but mimics an ancient seasonal pathway of *The Bundian Way*. It is late, and dark. I got caught in rich conversation at Millpost. It is a gradual decline through mist, into the unseen and unheard, swallowed by the deep. Tall eucalypt forests mark the entrance to Bermagui, forests that continue to be the objects of conservation wars. It’s a town built on gold, tin, timber and fish flesh. I sleep deeply and wake to twisted, wind-swept flora; shaped by froth and flotsam; to lungs and ears filled with insects, to turtles, and to whales in the deep (fig 39). Sand shifts and blows, resisting conformity and abrasive to certain imaginaries.

Here I consider ecological restoration within community-based volunteer projects on public land at the edge of the continent. Discourses of environmental conservation and 1970s environmentalism are significant in asserting powerful knowledge and enrolling local communities of care. The experiences and emotions of two volunteer restoration groups are explored, and ecological restoration is framed as an affective practice. Environmental writer Gavin Van Horn reflects:

> [I]n restoring a piece of land, big or small, a person is asking questions not just with mind but also with body. If a restorationist is honest, she probably pauses at some point and thinks: Why the hell am I breaking my back for this? In the short term, it can be difficult to perceive what, if anything, has changed due to one’s labors.735

Through participating in restoration projects, practitioners are confronted with past, present, and future realities. In *Sand*, the experience of restoration work is highlighted. This study faces out to the ocean, to consider the changes that are coming and what role restoration has amidst uncertainty.

Sand: History

Sand & Bermagui

The air is salty, sweet, and full of life. Fresh water lagoons are bordered by forest and scrub to the west and the vast ocean to the east. Local ecological communities are diverse: spotted gum woodland; sweet pittosporum low closed forest; heath-leaved paperbark scrub; cumbungi and spike rush bushland; kangaroo grass/bladey grass grassland; coastal wattle/coastal beard heath heathland; coastal salt-bush/coastal rosemary/coastal banksia heathland; drooping she-oak woodland.\textsuperscript{736} The edges of ecological communities are always the richest in species. Edge ecology, and the delineated transitional ecosystems are ‘ecotones’, shading from one group of species into the next.\textsuperscript{737}

Taglines for tourism along the NSW south coast include phrases like ‘Sapphire Coast: Beautifully Uncivilised’ and ‘Australia’s Coastal Wilderness: Embrace Something Wild’, but it is far from wilderness.\textsuperscript{738} Layers of diverse Indigenous culture, a gold rush tent city, forestry and fishing industries, cattle grazing and farming pursuits (amongst them ostrich, potatoes and peas) disrupt this marketing fantasy. These days, retirement, development and tourism ventures dominate. On 21 April 1770, Captain James Cook passed this piece of coast and named Mt. Dromedary (now known again by its original name Gulaga).\textsuperscript{739} It was not until 1797 that European survivors from the wreck of Sydney Cove stepped ashore, onto land of the Dyirringany people of the Yuin Aboriginal language group. Impacts of European invasion in the area dramatically altered local ecology and culture.

The ancient geomorphology, limnology and ecology of the place have been foundational to the settlement and growth of Bermagui. An article in the *Sydney Mail* (1880) described Bermagui

\textsuperscript{736} Quint, “Bermagui Flora and Fauna Reserve Bushland Survey.”
\textsuperscript{737} The history of the concept ‘ecotones’ had an important role in shifting conservation science to whole of landscape approaches. See Risser, “The Status of the Science Examining Ecotones.”
\textsuperscript{739} Davidson, “History of Bermagui and the District,” 14.
thus: ‘The massive, stately spotted gum-trees, the iron barks, and the stringybarks of the locality excited the admiration of many of the diggers, many of whom declared they had never seen a country better timbered… Bermagui has wood, water, and gold, and the population to properly develop its resources.’

Bermagui was built on the exploitation of natural resources. Beyond mining, grazing of hard-hooved animals has had a severe impact on local ecosystems since settlement. Watering of cattle in fresh-water bodies disturbed delicate soils, causing significant turbidity and damage to habitat and ecological processes. Until its closure in 1977, the town was home to a large timber mill and was a significant player in the forest industry of the region. While the local mill has closed, forestry continues in the region. The Bermagui State Forest is managed by the forestry industry, destined for chipping or milling. Activists continue to fight for the preservation of the remaining spotted gum habitat, calling for it to be turned into National Park. The edge of the continental shelf is just 11 nautical miles from the shore, making Bermagui popular for recreational and commercial deep-sea fishing. It was made famous on the world stage in the global game fishing community by American Zane Grey who visited Bermagui in 1936.

Grazing, clearing, and mining have all contributed to significant modification of Bermagui’s environment over the century (see fig 40). An article in the Sydney Mail in October 1880 explained the incompatibilities of resource desires and biophysical characteristics thus: ‘The claims on this part of it [the beach] are badly placed, being between two bodies of water, and, as the rock is below the level of the lagoon, will always be subject to floodings.’ Still, proximity to the coast didn’t stop gold prospectors. Periodically, storm surges and drifting beach sand have impinged on the permanent coastal settlement, threatening fresh water sources and economic sustainability of the town.

741 For more on the significance on damage to waterholes in settler history see Muir, The Broken Promise of Agricultural Progress: An Environmental History.
742 Grey, An American Angler in Australia.
744 “Bermagui,” January 1924, 2.
In 1971, on the coast of New South Wales, near the eastern end of an ancient Aboriginal pathway that connected Mt Kosciuszko to the ocean, road crust was collapsing. Bermagui has a history, like the other two case studies, of a combination of grazing, mining and clearing (and here also fishing) that have dramatically altered local ecosystems. Bermagui was an industry town but that was beginning to change. Time and again the messages from the ocean and the soils that practices were out of check with the local ecosystem were ignored. Unusually high tides crashed down on bitumen laid thinly on mobile dunes. Sand eroded and was swept out to sea. Local environmentalists mobilised as a result of the crumbling of the road and the recognition of the instability of the dune system.

To put this study in historical context, we visit the emergence of 1970s environmentalism in resistance to post-war ‘growth’ and ‘progress.’ The 1970s were an era when preservationist conservation and ‘radical environmentalism’ grew. Around the world, there was both a growth in environmental destruction and in contemporary environmentalism.745 At the southern end of the continent, there was a nation-wide unsuccessful campaign to save Tasmanian Lake Pedder (1966-73), and a subsequent successful campaign to stop the damming of the Franklin River (1976-83). This saw the beginning of The Wilderness Society and the environmentally focused United Tasmania Group.746 Then, following the identification of significant uranium bodies in the north of the continent, national anti-nuclear campaigning erupted.747 It was in Tasmania and in New Zealand that the world’s first ‘green’ political parties emerged in direct response to concrete examples of environmental destruction through damming of lakes for hydroelectricity, as well as wider rejection of the costs of industrial ‘progress.’748 As historian Stephen Rainbow articulates: ‘[t]he defense of these lakes was rarely couched in intellectual terms, but arose from an emotional rejection of environmental destruction as the price of progress.’749 Increasingly,


747 Concerns about nuclear risk in Australia were first highlighted in 1972 and 1973 when French nuclear weapons were tested in the Pacific and the Labor government took the French to the International Court of Justice over the issue.


expert science was used to validate the values of the conservation efforts, often over local, place-based knowledge gathered over time. The 1970s were a time of environmental reaction to the degradation associated with business as usual.

1970s environmentalism reinforced the wilderness concept that either repeated the myth of terra nullius or idealised Indigenous people as living in ‘balance’ with nature. As Indigenous scholar Marcia Langton writes ‘just as terra nullius was a lie, so was this European fantasy of wilderness. There is no wilderness, but there are cultural landscapes.’750 The relationship between Indigenous rights and environmentalism continues to be complex in Australia, with different values underpinning how land can be used.751 The projects described below carry these legacies through the enduring sensitivities to the political and deeply affecting aspects ecological restoration work.

Today, these sensitivities continue to be negotiated through the affective practice of ecological restoration. The work is personal and palpable. We now explore the practices of contemporary restoration work in Bermagui through participatory social research with volunteer groups. Here, ecological restoration volunteers react to the cumulative impacts of agriculture, mining, forestry and fishing on local ecosystems. Colonially framed social and ecological imaginaries are unravelled through the cultivation of reciprocal, attentive and caring encounters with the environment. This study highlights how human–environment relationships extending back to colonial visions of Australia are repeatedly encountered and complicated through engagements with material ecologies and the affective experiences of restoration work. As well as reframing the past, participants commit to their place amidst an uncertain future.

Affective Ecological Restoration: Bodies of Emotional Practice

As published elsewhere in a modified form.  

Hands-on ecological restoration brings social, cultural and ethical considerations to the foreground, through an ‘experiential bridge between people and land.’ Those working on ecological restoration projects understand that they can never entirely recreate a historical state. Rather, local ecological contingencies from a particular point in history foreground a dialogue with the past in decision-making that can achieve important political and ethical work. This section looks to people inside ecological communities, drawing on research conducted in November 2015 with two volunteer restoration groups on the south-east coast of New South Wales (NSW), Australia. Through place-based environmental practices, discordances emerge between the histories written and told, and the histories encountered and drawn upon. Five affective encounters—loving, labouring, learning, limiting, and letting go—illustrate how the practice of restoration provides opportunities to confront and counter dominant histories and reimagine relationships with place. Through phenomenological, meaningful encounters with non-human others, and observation-based learning, the land insists on new stories.  

This research is published in a 2018 paper: Pearce, “Affective Ecological Restoration: Bodies of Emotional Practice.” Sincere thanks to: Bermagui Flora and Fauna Reserve Trust, Bermagui Dune Care and the Bermagui Historical Society for participating in the study and providing access to archives; two anonymous reviewers for valuable feedback on earlier versions of the paper and Alessandro Antonello and Ruth Morgan for skilful editorship of the edited journal: International Review of Environmental History Volume 4 Issue 1 (2018).  


Over three weeks in November 2015 I interviewed restoration volunteers, researched archival materials, walked the land being restored, and participated in restoration activities. I focused on two projects: Long Swamp, with Bermagui Flora and Fauna Reserve Trust, and Cuttagee Point, with Bermagui Dunecare. Field notes, personal reflections, archival material and transcripts of interviews inform this work. Unless otherwise noted, all quotes in this section come from participatory field research interviews. Due to requests of anonymity, pseudonyms have been used and specific locations have been omitted where possible. Certain aspects of engagement with Aboriginal people and culture in restoration projects have been deliberately omitted on request of some participants with concerns about how the groups are portrayed.  

In doing so it takes seriously the corporeal turns in philosophy. See Merleau-Ponty, “The Phenomenology of Perception.” For an example of the application of this theory to outdoor education see Payne and Watchow, “Phenomenological Deconstruction, Slow Pedagogy, and the Corporeal Turn in Wild Environmental/Outdoor Education.”  

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754 Over three weeks in November 2015 I interviewed restoration volunteers, researched archival materials, walked the land being restored, and participated in restoration activities. I focused on two projects: Long Swamp, with Bermagui Flora and Fauna Reserve Trust, and Cuttagee Point, with Bermagui Dunecare. Field notes, personal reflections, archival material and transcripts of interviews inform this work. Unless otherwise noted, all quotes in this section come from participatory field research interviews. Due to requests of anonymity, pseudonyms have been used and specific locations have been omitted where possible. Certain aspects of engagement with Aboriginal people and culture in restoration projects have been deliberately omitted on request of some participants with concerns about how the groups are portrayed.  
755 In doing so it takes seriously the corporeal turns in philosophy. See Merleau-Ponty, “The Phenomenology of Perception.” For an example of the application of this theory to outdoor education see Payne and Watchow, “Phenomenological Deconstruction, Slow Pedagogy, and the Corporeal Turn in Wild Environmental/Outdoor Education.”
Ecological restoration as emotional practice

Ecological restoration responds to ecological disturbance, most often of human origin, and aims to return an ecosystem to a pre-disturbance state. ‘Emotion’ itself refers to a public disturbance, from Old French *emouvoir*, which means ‘to stir up.’ Emotions have been considered previously within ecological restoration discourse, particularly with regards to shame and grief. I take the emotions experienced through restoration to be central to the practice itself—part of Higgs’ proposal to think of restoration as conversation. Thus loss, nostalgia, disappointment, frustration, hope, and love all form part of the restoration praxis, by cultivating new knowledge, reflection, and conversation. Emotions are foundational to decisions around management practices and the idealisation of historical states. Monique Scheer argues, ‘[C]onceiving of emotions as practices means understanding them as emerging from bodily dispositions conditioned by a social context, which always has cultural and historical specificity.’ Restoration practices operate inside cultural and historical constructions and are bound up in emotional practices involving ‘the self (as body and mind), language, material artefacts, the environment, and other people.’ Emotions are not just something that one experiences, but also something that one does with practical outcomes, providing a useful conduit within which to challenge and respond to broader colonial legacies.

Australian eco-philosopher Val Plumwood’s approach, which ‘asks the human to query herself, and seeks to open the human to the experience of others in the contexts of their own communicative and expressive lives’, presents an opportunity to navigate the role of history in ecological restoration and arising ethical questions through affective human relationships. This must be done in place, in the continual unfolding of webs of relationships of biotic and abiotic lives and imaginaries bounded by space.

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759 Scheer, 193.
Introducing practices

Only a small dune system divides the fresh water wetland, known commonly today as ‘Long Swamp’ from the ocean at Haywards Beach (fig 40). Just one week after the initial discovery of gold in a gully running seaward, in 1880, ‘three hundred men’ flocked to the seaside, until the beach ground adjacent to Long Swamp was ‘pegged out from Bermagui nearly three miles in a northerly direction.’\textsuperscript{762} Then commonly known as ‘Long Lagoon’, it was described soon after the discovery of low-land gold as ‘a fine sheet of fresh water, over 60 chains long, and, perhaps, half as wide, which is situated a few chains from the beach diggings…[that] now serves the population of Bermagui with all the water required for domestic purposes. It is nine feet deep in parts and undoubtedly is permanent.’\textsuperscript{763} From higher slopes, a flying fox carried ore from Gulaga down the valley for crushing—a true land of flying fox and drifting sands. With both timber and water plentiful, ‘it did not take long to arrive at the conclusion that Bermagui was a favourable place for settlement.’\textsuperscript{764}

The crumbling bitumen of Old Tilba Road is a material reminder of the ongoing settler misunderstanding of the dunes and variability of the ocean. In 1971, unusually high tides washed away part of the road. Erosion of the dunes continued, accelerated by waves, until large sections of the road collapsed. In 1973, the land between Long Swamp and Haywards Beach became ‘Crown Reserve 88847’ and was handed to the management of the Bermagui Environment Group (now the Bermagui Flora and Fauna Reserve Trust, hereafter ‘BFFRT’). In 1975, the road was closed, but the road itself was not included in the Crown Reserve. A local council proposal in 1991 to re-open the road amassed local ‘anger and dismay’ by those with a longer-term memory of the issues of its location on a primary dune, including pre-collapse banks of sand that would drift over the road making it unusable for transport of people, or indeed stock.\textsuperscript{765} Calls to develop the road to cater for cars or bikes recur intermittently, demonstrating the short-term memory or selective amnesia of biophysical realities. Today, the road forms an integral part of the reserve, and restored vegetation creeps over the remaining

\textsuperscript{762} “Latest Mining Telegrams.”
\textsuperscript{763} “The Bermagui Gold-Field,” 8.
\textsuperscript{764} “The Bermagui Gold-Field,” 8.
\textsuperscript{765} “Road Re-Opening Angers Residents.”

234
tarmac (fig 41). The BFFRT is tasked with protecting the native flora and fauna at both Long Swamp and Bermagui North Lagoon. The restored Long Swamp and the surrounding land and dune system hosts a diverse suite of species (both locally endemic and migratory) and is protected under the New South Wales State Environment Planning Policy number 14 (SEPP 14) for coastal wetlands.

Figure 41: Top: Old Tilba Road (looking south) after storm surge circa 1974. Photo by Sister Harris, reproduced with permission of Bermagui Historical Society. Bottom: Old Tilba Road (looking north) after restoration efforts, 2015. Source: author.
Just south is Cuttagee Point, where potatoes and peas used to grow high above the exposed coastal cliff. The headland was used for grazing and farming between 1877-1976, when it was acquired by the NSW Government and became a Crown Land Reserve. The very tip of the headland forms part of Biamanga National Park (established 1994). In May 2006, the park was returned to the Yuin people and is jointly managed with the National Parks and Wildlife Service. Volunteer group Bermagui Dune Care has worked on the site since 2012, liaising with responsible managers and receiving small grants to fund their volunteer work, which is made up primarily of general tidying, weed clearing and planting (fig 42). Their local sign lists their aims to ‘restore native vegetation, increase biodiversity, preserve vehicular access, and improve viewpoints and information.’ The regular attendance, maintenance and vision brought by the expertise and passion of the group has led to a resounding ecological improvement of the point.

Amidst the pig face (*Carpobrutus glaucescens*), banksia (*Banksia integrifolia*) and paperbark (*Malaleuca ericifolia*), are people. Some are on their knees, gently sorting one plant from another, pulling out those not welcome. Some are hauling away plastic guards that contort seedlings, removing the obvious evidence of human hands at work. The shock of a thistle spur that gets through your gloves, the fragrant mix of sunscreen and dirt, familiarity with sclerophyllous foliage and pig face flesh all build experiences of cooperation and cohabitation in the local environment.

As the place continues to change and the waves roll further into shore, sharp definitions of ecological belonging are being washed away. Questions arise that oblige answers beyond those bounded by fixed histories. Old photographs, maps, local tales and personal observation make up narratives of historical validity; expert science, ecological modelling and mapping add vigour to activities, but it is within the affective experiences of restoration that fresh perspectives on settler ideas of place erupt. The following five emotional practices demonstrate how affective experiences of restoration within place can open dialogue to plural ontological and epistemological perspectives and shift the path of dominant histories.

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766 Cuttagee Point history and Bermagui Dune Care information is detailed on a sign titled ‘Restoring Cuttagee Point’ in location, viewed on multiple visits, November 2015.
Figure 42: Recent plantings by Bermagui Dunecare on Cuttagee Point, 2015. Source: author.

**Loving**

‘People love these places…so that’s why they want to look after it. It’s not just economic and so on,’ Bruce describes. I am told about regular, sometimes daily visits to their sites. For many volunteers in Bermagui, restoration provides a reason to get outside, a hobby, and a supportive social network. In the mid-morning the group takes a rest over a thermos of tea, cakes and biscuits and together we reflect on why they are involved. Glenn says he loves ‘working with a bunch of likeminded people’, who value the wetlands and the coast for their ‘intrinsic value.’ Many of the volunteers love the hands-on aspect of their work. Alana tells me that she ‘love[s] being outside and doing physical work’, Penny describes how her ‘fingers get itchy’ when passing weeds. Great satisfaction comes from existing in a reciprocal and generous relationship with the environment. ‘I think’, says Chris, ‘everybody feels that they want to be involved in

767 For discussions about ecological restoration and community strengthening see Higgs, *Nature by Design: People, Natural Process, and Ecological Restoration*.
768 The notion of reciprocal relationships is inspired by Robin Kimmerer: Kimmerer, “Restoration and Reciprocity: The Contributions of Traditional Ecological Knowledge.”
helping the environment, but we also get rewards in seeing the plants growing. Planting is just so heartening. You sort of feel good after it.’ Bruce tells me ‘I walk along the coast now and think oh gee look how different that is and I was part of that! [laughter]. It’s a great feeling.’ ‘I always find that the land is my connection…so when I retired, I wanted to make sure that in my voluntary work I was giving back to the land,’ says Alex. In Sarah’s understanding:

[I]t was like Europe, for centuries and centuries, you know—you flatten it, you concretise it, you build a road, you build a factory, you build a house, you cut down the trees, you burn them, you make them into something. Oh, there’s fish, quick, you kill them, you eat them, you know…so in some ways I feel like this is our little bit of healing, is to somehow say…we give back to this land its natural state.

The love and care experienced in restoration is critical to shifting relationships within and with the local environment; responding to extractive settler histories. Of course, different values of ‘nature’ co-exist, revoking blind hope for full ecological enlightenment. In the 1880s, as locals showed an appreciation of local plants (fig 43) they also severely degraded the environment through their resource demands; this co-existence continues today. 769

Restoration practices satisfy a human need for cultural and natural connection and cultivate caring relationships with what Haraway refers to as ‘non-human kin.’ Love and commitment to place fosters a rich sense of belonging. From such a position, one is exposing themselves to stress, grief and loss.770 In 1974, geographer Yi Fu Tuan coined the term ‘topophilia’, literally ‘love of place’, and in 2005 Albrecht developed the related term ‘solastalgia’— grief over loss of a sense of place.771 These volunteers are not afraid to fight hard for the places they love, but through commitment and care, new kinds of vulnerability are also forged.

769 Figure 43 photograph from Bodalla State Forests, “Mt. Dromedary Flora Reserve No. 79948, Bodalla State Forest No. 606: Working Plan.”
771 Tuan, Topophilia: A Study of Environmental Perception, Attitudes, and Values; Albrecht, “‘Solastalgia’: A New Concept in Health and Identity.” How ‘Solastalgia’ faces up to legal matters is explored in Kennedy, “A Case of Place: Solastalgia Comes before the Court.” I use the term ‘love’ intentionally throughout to encourage the discussion of love and other emotions in environmental debates, often resisted. See Morrison, Johnston, and Longhurst, “Critical Geographies of Love as Spatial, Relational and Political.”
Labouring

Ecological restoration is both physically and emotionally demanding. A ‘reserve trust’ under Part 5 of the Crown Lands Act 1989 is a body corporate appointed to manage a reserve. As an independent body of the Government, the role necessitates arduous paperwork and accountability. In 2003, the NSW Government estimated approximately ten thousand people were involved in voluntarily managing the States’ Crown reserves, significantly propping up environmental management. On top of their physical labour, volunteers juggle responsibility to Crown Lands, sometimes complicated relationships with the local community and competing land uses. There are concerns about the ongoing energy in volunteer groups.

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772 As Higgs has points out, both physical work and decision-making can be onerous: Higgs, Nature by Design: People, Natural Process, and Ecological Restoration.
773 Department of Lands, “Trust Board Members Application for Appointment Advertisement.”
Most of the volunteers in Bermagui are elderly or retired. Chris worries that ‘there doesn’t seem to be any younger people coming in.’ He says that because so many activities in Bermagui rely on volunteers, people are already committed, and young people are often busy with demands of family life. Increasing strains of menial managerial roles, such as occupational health and safety compliance, insurance and paperwork, are taxing on volunteers and discourage participation. Rob tells me, ‘you get people offside for not giving them credit for being sensible and safe.’ Penny wonders why people need to join an organisation to have their awareness, consciousness and commitment raised. She sees opportunities to get involved as limited, saying: ‘environmental work is for the privileged.’ This comment highlights the important fact that ecological restoration practice can unintentionally further, rather than resist, historical and cultural hegemonic practices. As is common in all social groups, work-imposed stresses and clashing characters influence the experience. Reliance on local knowledge, personal connections, and passion creates its own risks. Loss of key individuals can severely impact a group’s capacity, knowledge and morale.

For emotional stamina, it is important that volunteers believe in the benefits of their labour, yet the task of ecological restoration is often overwhelming and relentless.\textsuperscript{774} This is particularly the case for weeding, which requires constant repetition. Penny says, ‘Sometimes you just feel oh my goodness, how can we do this? How do you get on top of that?’ As Alex says, ‘[I]t’s daunting, you know, where do you start? And I know it’s best from [previous experience] that you just start in one little section and move on.’ This is one of the principles of the Bradley Method, established in Australia in 1988, that proposes moving ‘at the pace of nature through space, from the most intact bush out to the most degraded areas,’ because, as its developer Joan Bradley put it, ‘[N]obody likes weeding the same piece of ground over and over again with precious little to show for it.’\textsuperscript{775} The Weeds Project has attended to the more arduous weed removal along the coastline.\textsuperscript{776} The project, celebrated for its contribution to employment and training for Yuin people, works with representatives from respective land councils in the


\textsuperscript{776} See Cameron, “The Bega Valley Shire’s Coastal Weeds Project.”
different sections of the coast. Since the efforts of The Weeds Project, the Dune Care group do not have any weeding to do on the beach, so they have been able to turn to planting. ‘It’s still hard work’, says Chris, ‘but you know they’re going to grow and shade out the weeds.’

Restoration work is often slow and reactive rather than fast and proactive. The environment keeps participating, creating ongoing and unpredictable challenges. Even when funding is available, the slow turnaround time of funding grants means immediate needs are often not met. Volunteer groups are vulnerable to community criticism by those who want to see constant progress. Penny says, ‘I feel negative but progress…there must be progress, there must be. Well there is—look at those pictures back there, and then look at this. So, there is progress, it’s just slow’. However, Penny also explains that ‘people are very quick to criticise…people will walk along here and say what are those people doing?’ It is important for onlookers and participants to remember that these individuals are volunteers doing the best they can. Otherwise, as Alex warns, ‘[I]t can become overwhelming…then people drop out.’ Some volunteers are frustrated that their labour is propping up local tourism, infrastructure, health and education without being adequately recognised or supported. An ethical shift from a colonial narrative of ‘progress’ and ‘improvement’ to one of co-creation, patience and endurance is evolving, but goes largely uncelebrated.

Physical and emotional exhaustion needs to be balanced by hope. Since restoration efforts at Long Swamp, a range of water birds, including some significant migratory species previously sallied by habitat decline and shooting have returned, spurring people on. As Rebecca Solnit has written, ‘[T]o hope is to give yourself to the future, and that commitment to the future makes the present habitable. Anything could happen, and whether we act or not has everything to do with it.’ It does not take much to look at an old photo, or make time to tell stories about how it used to be in order to acknowledge success—and it is an important step both for the group and for the wider community.

Solnit, *Hope in the Dark: Untold Possibilities, Wild Histories*, 5. Duck shooting announcements and documentation of numbers are documented in multiple news articles. For example see:“Mumbulla Shire Council.”
Learning

Through restoration practice, people get to know a place. They come into relationship with its biophysical features, stories, cultures, memories, histories and spirit. Rose has argued, ‘Earth language is never monological; always relational, it is a call to enter into encounters, to be co-present and engaged’, encouraging us to ‘listen in multiple registers.’ The act of restoration requires multi-sensory listening and learning. Sarah said: ‘I see sugar gliders, there are more snakes, I can hear the cacophony of frogs at night…I can only go on what I have seen…I can read historical things but I have no visual or verbal proof of that.’ Philosopher and writer David Abram suggests that ‘each ecology has its own psyche, and the local people bind their imaginations to the psyche of the place by letting the land dream its tales through them.’ Geography is not merely a subject of place identity, but rather is alive with stories integral to forming place attachment and understanding.

Ecological restoration in Bermagui nurtures a place-based form of local knowledge as a counterpart to imported frameworks and ‘expert science.’ Sarah described her mission in Bermagui as ‘to put back what had been taken away around town.’ The BFFRT has commissioned ecological reports to establish the characteristics and ecological values of the area. Some examples include *Bermagui Flora and Fauna Reserve Bushland Survey* (1986); *Fauna and Flora Assessment: Bermagui Flora and Fauna Reserve* (1997) and *The Limnology of Long Swamp* (1997). These documents guide restoration activities, establish benchmarks for measuring success, and provide scientific legitimacy that underpins grant applications. Yet different forms of knowledge emerge through practical experience, and monitoring occurs from having eyes, ears and feet on the ground. Alana shared that: ‘being in there more often means that I’ll see more…enjoy it more, in a more sort of tactile and visual way.’ Penny told me: ‘what I’m enjoying most is getting to know the wetland, getting to know the flora and fauna and feeling more connected to it.’ Local experience has led Alex to question the European seasonal calendar. She says: ‘we’re still sort of fitting in with the four seasons as set up by the British, whereas a lot of the Aboriginal people, I mean, they’ll have anything from two to eight…why

do we still set ourselves...against a country that’s miles away? Why can’t we learn?" As Van Wieren has written, ‘[R]estoration activities provide a context of people to learn from the other wild beings and processes that shape their own and other creatures’ lives.”

The management of carp in Long Swamp provides an example of how ecological restoration can draw on local ecologies and environmental history. Carp (Cyprinus carpio) were introduced to Long Swamp by past local property owners in the early twentieth century, a time when acclimatisation societies thrived. Their intention was to provide fishing opportunities as part of a planned caravan park. It is now known that carp increase water turbidity and drastically impact Australian freshwater ecosystems by altering ecology and excluding many native species, making their removal an obvious task for ecological restoration. The proven method of eradicating carp—draining the wetland and covering the surface with lime to kill off any life—was unacceptable to the group due to the impact on other species. Instead, they developed a successful place-based approach that entailed local culture, the agency of the natural world, and a positive interpretation of drought. Sarah explained their thinking thus:

we were in a fishing town, there’s a regular fishing competition, why don’t we pay the fishermen to have competitions to fish out the carp a couple of times a year, going for the most fish caught, the biggest fish caught… So we had that happen several years, back to back, until there’s a point where basically they weren’t catching anything…At the same time nature was on our side, because we’d had a drought, so as a group we decided to put one, two, three, four, I think, bird perches into the wetlands. Now, cormorants came to those perches straight away, and we figured that they would fish out any fingerlings that hatched.

Another species that was the target for eradication was Marram grass (Ammophila arenaria). Around 1911, Marram grass was planted in stages in an attempt to stabilise coastal dunes and reduce drift sand. This was an early rehabilitation action in response to the effects of clearing local vegetation. An article in the Cobargo Chronicle in January of 1924 applauded the project:

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783 See Weber and Brown, “Effects of Common Carp on Aquatic Ecosystems 80 Years after ‘Carp as a Dominant’: Ecological Insights for Fisheries Management.”
The trustees of the recreation ground are to be congratulated on their success in arresting the drift of beach sand by the planting of marram grass…There was a danger a couple of years ago that the drift of a big wave of sand would pour through the forest trees on the ground and kill them out in a face. This danger has been averted. Carry on the good work Sam.784

It is now understood that Marram grass competes with native grasses and has sand binding properties that can result in dunes becoming steeper. After its successful colonisation and spread, it is now considered an environmental weed and is actively removed from Australian coastal habitat. This is an example of how ecological learning has come in waves, moving further now towards that of ecological systems thinking where a fast-functional fix is not enough.

Restoration work also participates in the generation of meaningful relationships and sacred places. Philosopher Levy-Bruhl noted, in 1938, ‘[A] sacred spot never presents itself to the mind in isolation. It is always part of a complex of things which include the plant and animal species which flourish there at various seasons…and all the emotions aroused by the whole.’785

By engaging with local ecologies, special places are emerging. There is a calm, liminal place, under wind-blown tea trees (*Leptospermum continentale*) where Penny stops: ‘It’s a place of silence. We should be quiet.’

Restoration teaches people about how to engage with their place in ways that challenge both extractive relationships and preservationist ideas of wilderness. Alex weaves: ‘I love walking past and seeing some really good lomandra (*Lomandra longifolia*)—just seeing what’s around me that—I mean, I can’t use it from here because it’s a reserve but I’m constantly looking to see.’ Later, she stops to point out local food plants, warrigal greens (*Tetragonia tetragonioides*) and pig face (*Carpobrotus glaucescens*). Alex hopes that through restoration she can address oversights entailed in settler notions of the bush, saying ‘I feel quite ashamed in a way that we’ve been in this country for all these years but my knowledge of bush tucker food is minimal, so I want to increase my knowledge…so I can protect those things and not think of them as a weed.’ The BFFRT does not use chemical spray to ensure that ‘bush tucker’ is safe to eat. Local


school children come here to learn about ecology, and about Yuin culture.

A lack of local observation and understanding of ecological processes among settlers contributed to allowing unchecked destruction, as well as misinformed management. Over time, through being in touch with the land, local knowledge has developed that contrasts with the hegemony of expert-led Western science. So too has a realisation of the potential for local Indigenous knowledge and culture to participate in ecological restoration. Possibilities to weave together the environment and the broader community come from being in place. There is a risk that through the use of Western science to support and validate their work, volunteers undervalue the importance of knowledge that comes from being in place, that only time and experience can spawn. In contrast, cultures of ecological reverence are built through restoration, local knowledge and care.

**Limiting**

Ecological restoration excludes unwanted others, with ethical and political consequences. Living nearby, Bruce describes that he is looking after his ‘own territory.’ Species, practices, and conflicting human values are carefully screened. A 1992 article in *Coastal Focus*, a newsletter for community groups along the New South Wales coast, explained, ‘People living along the coast of New South Wales often feel they live in “a little bit of paradise” and when forces of destruction threaten, they fight back.’

This coastline has a history of repeated conflict between values of industry and of conservation. A 1993 Department of Water Resources, Water Policy Division community guideline development process captures some conflicting responses to local wetlands. Participants said: ‘individual wetlands need to be managed separately’; ‘a universal approach is needed’; ‘grazing is an important value of wetlands’, and ‘wetlands have an intrinsic value.’ Yet settler drives for progress and consumption are rebutted by restoration through more than explanations of ‘intrinsic value.’ Caring relationships with the natural world actively counter capitalist framings of valuing place. Sarah says: ‘When you talk to people in town, even businesses now, who’re

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786 See Trigger et al., “Ecological Restoration, Cultural Preferences and the Negotiation of ‘nativesness’ in Australia.”
787 “Editor’s Note,” 1.
interested in money money money, [they] say ‘where can we go as a town?’—this was a resource town—this is a logging, fishing town. Totally a resource town.’ Through ecological restoration, volunteers are demonstrating, and fighting for, a different relationship with the natural world.

On 4 June 1999, the second stage fencing of ‘Long Swamp’ was completed. This defined property boundaries and excluded neighbouring cattle from using the wetland as a water source. For a local family who had used the wetland for watering their animals for generations, particularly in drought times, this was a great blight on their history as well as a practical inconvenience. The exclusion of stock quickly demonstrated how a small intervention allows dramatic repair. Rob says: ‘I sometimes think that we didn’t actually have to do anything other than fence it off. The melaleucas and the banksias all self-seed very efficiently.’ While some neighbours have willingly established buffer-zones within their properties to accelerate healing, others still resist these management approaches.

The success of the restoration work has created an environment that is once again desired and more attractive to developers. Alana said, ‘[T]he road was washed out twice and then the Council just gave up and said okay you can have it, but then they want it back…twenty years later they want it.’ Demands to cater for dog walking, cycling and fishing repeatedly challenge the ecological focus. In June 2000, there was a plan for 2000 bass fingerlings to be introduced to Long Swamp to provide recreational fishing opportunities. How short the memory and recurrent the dream of an introduced fish frenzy. The BFFRT argued successfully against this plan, on the basis that bass would threaten littoral invertebrates, zooplankton and amphibian species, leaning too, on legislative powers of its SEPP 14 listing. In this context local community and institutional knowledge is vital in order not to repeat the mistakes of settlement past and not to present a piece of land ripe for the taking.

Actively managing and marking land has been a strong part of the colonial project. Now the

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789 Instone, “Fencing in/Fencing and: Fences, Sheep and Other Technologies of Landscape Production in Australia,” 376. As discussed in Soil.
active mark is being used in order to defend a place for nature. Volunteers emphasise the need to keep it ‘natural’ while establishing a strong presence through signs and events so that there is less pressure from competing groups. ‘It makes it look like something is being done,’ says Rob, who jests ‘what I would like to do is put a bloody chainmail fence across either end of the road and keep people out and then it’d look after itself very well.’

While weeding on Cuttagee Point, a question is asked about whether a species is ‘one that belonged or not’. It is deemed ‘a legitimate local grass’ so is spared. Weeding, a foundational aspect of most ecological restoration projects, continuously enacts territorial exclusion. Informality and tenuousness of resourcing and capability for weed control plagues environmental management. Weed management decisions are triaged due to limited resources, meaning that many non-native species are reticently accepted. Inkweed (*Phytolacca octandra*) is a perennial herb with a shrubby habit that is listed as an environmental weed in the local Eurobodalla Shire. Its seed is spread by birds–likely the same ones that are flittering about over our heads as Bruce cuts it back. ‘I don’t want to destroy it’, he says, ‘just subdue it a bit.’ In a 2014 report on weed infestations written for BFFRT there is long lists of species assessed as of low concern. These are carefully distinguished from those with a demonstrated capacity to modify the landscape or soils that are prioritised by local land managers. The management of weeds is considered according to each site’s unique characteristics, but clear ‘native’ and ‘exotic’ definitions to colonially informed baselines of belonging are fading. Instead, species are beginning to be approached from an ecological systems perspective:

> [L]ike these thistles for instance…they’re a response to spraying the kikuyu and I think…that there’s a clump of them that seem to be defending a small banksia against browsing…sometimes you can use things like that and, and also if we grubbed out here, if we managed to grub out every thistle that was here we’d still have just as many next year I’m sure. (Bruce)

Navigating different values within a community is a hard reality for groups working on public land. Philosophical debates about what belongs and how much they should be resisting change

790 See Blomey, “Un-Real Estate: Proprietary Space and Public Gardening.”
791 For a detailed example see Head et al., “Living with Invasive Plants in the Anthropocene: The Importance of Understanding Practice and Experience,” 316.
regularly come up in decision-making. Sometimes exceptions are made for social reasons, like retaining some ‘exotic’ trees that were planted as memorials, giving them important social value. Such conversations bring up new insights into human belonging too: ‘And we’re feral?’ says asks, ‘[C]ause we say we’re Australian!’ Ecological restoration can respond to the degradation of past and aim for a resilient and diverse system, but it operates within contested landscapes layered with histories.

*Letting go*

Through ecological restoration, people are able to learn from the environment about change, acceptance, impermanence and letting go. Emphasis is placed on the practice itself rather than fixed outcomes. In the 1991 annual report of the Conservation Council of the South-East Region & Canberra, acting president Graeme Evans wrote, ‘[A]daptation to new circumstances will sometimes provide a continuity with the past which strict adherence to established forms would leave shattered.’ 793 In this way, restoration can be a practice of absolution from control, as expressed through the following examples of sweet pittosporum movements, egg-laying habits of turtles and sea level rise.

At multiple points along the coast, sweet pittosporum (*Pittosporum undulatum*) is proliferating, forming thickets of dense green foliage amidst tea tree, spotted gum and banksia. Without ecological burning, and with ongoing dispersal by birds, it is expanding its ranges far beyond documented historical limits, outcompeting other native plants. This species has created dilemmas for environmental managers across eastern Australia. 794 At Cuttagee Point, sweet pittosporums are increasing. They are not the only rainforest species thriving under the current management regime. The plantings at Cuttagee Point include more lilly pillies (*Syzigium spp.*), which are at the southern end of their range. This was done consciously to take account of shifting ecological ranges, but in a measured way. Bruce says he ‘wouldn’t go about deliberately you know, constructing a wholly new environment’ but he is realistic about the role people have had to play in ecological change:

794 See Cooke and Lane, “Re-Thinking Rural-Amenity Ecologies for Environmental Management in the Anthropocene.”
In effect we’ve changed the landform and the fire regimes, so I think, look we just have to go with it. I’m not sort of purist in view to restore this to exactly the way it was pre-European—well in fact we don’t even know about that because a lot of these headlands were kept burnt by Aboriginal people…There could have been a thousand species here once, if you start talking about orchids and lilies and things, and there’s no way that we can restore that. We don’t know how. All you can do it put the structure back and let it go, I think.

Long neck turtles (Chelodina longicollis) lay their eggs far above the level of high tide. Complex landform and ocean processes mean turtles have evolved knowing that their eggs need to be far from the shore. Their movements are sensitively attuned to the flux of local environmental conditions.795 Like unexpected migrations of little penguins in urban Sydney, these turtles make their way through paddocks and fences into tended gardens and lawns to return to the place from which they came.796 Such ecologies remind people of the importance of living in Australian environments with full consciousness of infrequent extremes, and of commitment to place. Ensuing reflections challenge spatial boundaries and call in private land management for conservation of local species.

Today, sea level rise is almost synonymous with climate change. The coastline has always been turbulent (recall fig 41). The future of Long Swamp as a fresh water lagoon relies on the dune remaining intact—an unlikely event given long term predictions. Alana says:

I think tsunamis will just take the whole thing out, um, sea level rise will just flood that whole bit, you know, I just... I, I—if I think about it too much I just get depressed, so I kind of just (small sigh) I don’t know (laughs)...anything could happen in twenty years so I just yeah, try and live in the moment and appreciate it for how it is right now.

Despite awareness of the impact that rising sea levels and high tides will continue to have on Long Swamp, volunteers value the importance of caring for it in the present driven by a deep love of their place. Alex says: ‘I might not be able to affect the big picture, but I can work at the coalface and make a difference, and that makes me feel better.’ Individual longings to contribute to remediation of global environmental challenges are submerged in a group or

795 Roe and Georges, “Terrestrial Activity, Movement and Spatial Ecology of an Australian Freshwater Turtle.”
796 On penguins see Van Dooren, Flight Ways: Life and Loss at the Edge of Extinction.
collective sentiment that is reassuring. Many people spoke of the need to bring the land to good health and resilience, so, as Alex says, ‘when the change that does happen, that these areas can still seed, blossom, do whatever they need to do.’

**Restorative ecologies for changing places**

In 2016, storms again pounded the NSW coast. Foam settled over the remnants of the road as the waves receded, taking much of the beach with them. The restored vegetation buffered the blow of the waves, but the long-term future of the coastline is precarious. Global climate change erodes the familiar, creates an experiential bridge from the local to the global, and provides a universalised justification for action. From this study, it seems important to also encourage language and storytelling that turns towards commitment in the face of the uncertain and irrational—of that which is particular, and that which is loved.797 Novelist Amitav Ghosh writes of the term ‘uncanny’:

> [N]o other word comes close to expressing the strangeness of what is unfolding around us. For these changes are not merely strange in the sense of being unknown or alien; their uncanniness lies precisely in the fact that in these encounters we recognise something we had turned away from: that is to say the presence and proximity of nonhuman interlocutors.798

Ecological restoration actively turns people *towards* the discourse between human and non-human others in constant renegotiation—through commitment and passion and grief. Such experiences erode settler mirages of human dominance and control, and in its place, encourage place-based vulnerability and care.

In Bermagui, settler extractive industries are being eroded, like the road by high tides. The mill has closed, local mining has ceased, property values are pushing out grazing, and many of the professional fishers are selling off their licenses and being supported through work transitions by the government.799 In their place, coastal tourism drawing on environmental, historical and cultural values expands, bringing new trials and possibilities. The people portrayed in this piece

797 Albrecht, “‘Solastalgia’: A New Concept in Health and Identity.”
798 Gosh, The Great Derangement: Climate Change and the Unthinkable, 30.
who continue to care for the environment through a series of social and environmental challenges are important characters in the story of change over time. Their actions are personal and collective, rational and emotional, hands-on and mythic. They manifest what Higgs calls ‘focal practice’, that fosters philosopher David Strong’s notion of ‘correlational coexistence.’ In this way, restoration can cultivate an environmental ‘ethics of praxis’, in which people are connected to the natural world in a reciprocal relationship by *taking care*.

Restoration practice enters into a dialogue with embodied histories of landscape change, as understanding, decisions, and successes are dictated by the past. By keeping their work rooted in local place and its histories—both told and untold—restoration practitioners can remain open to reflection and uncertainty, cultivating generous relationships with changing places. Ecological restoration is indeed ‘rooted in ecological history’, yet, as the environment drifts, so too does the importance of committed local relationships with place. The affective elements of restoration expressed in this section denote the powerful component of emotions to the practice. Emotions engage history through another kind of healing potential: by dwelling in it, dismantling colonially framed imaginaries, and plotting out alternatives for ways of being with, knowing and narrating place. Seen in this light, ecological restoration can be a powerful practice that attends to and disarms limiting ideas of history, contributes to a de-colonisation of environmental management and increases meaningful responses to contemporary environmental tribulations.

This study demonstrates how restoration practices cultivate committed, caring relationships with local places. Through embodied encounters, the vulnerabilities and troubles of restoration can emerge.

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801 Cooke and Lane, “Re-Thinking Rural-Amenity Ecologies for Environmental Management in the Anthropocene,” 228.

802 Jackson and Hobbs, “Ecological Restoration in the Light of Ecological History.”
Sand: Reflection

This section considers the implications of the affective work of ecological restoration. In particular, it looks to perspectives from the social sciences and humanities to aid in understanding the way these emotions play into the politics of belonging; the practice of reciprocity, and the experience of loss.

**The political work of embodied relationships**

Ecological restoration practice resists emotional removal from environmental relationships. Dulling emotion and soldiering on were necessary for colonisation, violence to people and place, and belief in narratives of ‘progress.’ From this place, ‘[C]olonists imagined themselves’, writes historian George Main ‘as physically and emotionally divorced from local particularities of nature.’ Yet ‘[I]n the present context of ecological destruction’, argues Plumwood, ‘we desperately need ways to increase our sensitivity to and communicativity with others of the earth.’ The cultivation of meaningful connection to changing places aids in important cultural work of noticing and responding to harmful acts.

Experiential bonds with the land, with human and with more-than-human others forge feelings of belonging. Social theorist Paul James explains that ‘[A]s the dominant ways in which we live have become more abstract, our bodies have become more open to processes of rationalisation, objectification, commodification and political-cultural management.’ In contrast, for restoration practitioners, sensitive grounded bodily engagements and detailed attention to surroundings are essential. This tactile work enables a critical discourse with local place and history that shapes people. Abram suggests that it is through such engagements that a place begins to shape the individual’s psyche, arguing that ‘[E]ach ecology has its own psyche,

803 Main, *Heartland: The Regeneration of Rural Place*, 222.
805 See philosophy of phenomenology: Relph, *Place and Placelessness*.
and the local people bind their imaginations to the psyche of the place by letting the land dream its tales through them.  

Through practising with like-minded individuals, communities are forged and strengthened. Restoration practice can therefore be described as one of phenomenologist Edward Relph’s examples of ‘communal experiences’, where shared perceptions of place are negotiated, and experiences and social norms are reinforced. These experiences, Relph explains, cultivate a feeling of ‘existential insideness’, of ‘belonging’, as opposed ‘existential outsideness’ defined by feelings of alienation. Through practising with like-minded individuals, communities are forged and strengthened. Restoration practice can therefore be described as one of phenomenologist Edward Relph’s examples of ‘communal experiences’, where shared perceptions of place are negotiated, and experiences and social norms are reinforced. These experiences, Relph explains, cultivate a feeling of ‘existential insideness’, of ‘belonging’, as opposed ‘existential outsideness’ defined by feelings of alienation. This concept is affirmed by Plumwood, who writes that ‘[P]lace attachment and place sensitivity…are vitally important ingredients in personal and community identity formation and in a good human life’, forged through both ‘emotional and critical approaches to place…rooted in memory.’ Through environmental practices such as ecological restoration, ‘[T]he landscape becomes the home-territory’, write sociologists Ruth Beilin and Karen Reid. Thus the embodied and situated acts of ecological restoration carry political consequences.

The assertion of home is performed in multiple ways, one of them, through labour. Van Horn draws on anthropologist Laura DeLind’s notion of “sweaty sacrifices” to describe how through restoration labour, ‘[M]eaningful relationships are invited, forged, and restored.’ Historian Lorenzo Veracini’s writing is useful here, reminding us that in settler-colonial discourses, history is displaced while ‘settler groups emphasise suffering as a strategy for legitimising their claim to country.’ That is, labour and suffering become tools for legitimacy in a settler-colonial context. The implications for such historiographical accounts are both backward and forward reaching, with a continuing dismissal of subsequent migrant belonging and denial of ongoing Indigenous presence.

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808 Relph, Place and Placelessness, 55. Paid labour use to professionalise and streamline the practice risks precluding the benefits of ethical encounter.
809 Plumwood, Environmental Culture: The Ecological Crisis of Reason, 233.
810 Reid and Beilin, “Making the Landscape ‘Home’; Narratives of Bushfire and Place in Australia,” 101.
813 Veracini, “Historylessness: Australia as a Settler Colonial Collective.”
Belonging is a fraught concept for non-Indigenous Australians. Wright outlines complicated theoretical notions of belonging, and states that, in Australia, ‘[B]elonging, and the creation of the nation itself, becomes a contested process informed by struggles over whiteness, indigeneity and diverse ‘ethnic others.’ A large body of work explores ideas of belonging and concept of ‘nativeness’ in the Australian context, advocating the significance of both environmental and human histories and complex relationships of power that are nested in cultural and environmental discourses. As environmental historian Emily O’Gorman describes, Australia ‘is a nation with a long history of problematic conceptualisations of belonging’, with belonging ‘still mobilised, often in violent acts of exclusion, and means life and death.’ O’Gorman argues that ‘belonging is never simply a question of biology or culture in isolation, but a terrain of contested biocultural meanings.’

Ecological restoration must be wary of becoming a practice that, in satisfying a need for security and belonging, participates in further oppression. Veracini powerfully writes of settler-colonial contexts, ‘a rhetorical reference to lack of history coexists with a competing—and equally recurring—reclamation of history, and an enhanced attention to the marking of a new experience.’ This concept is supported by Australian philosopher Linn Miller’s explanation that a desperation for a sense of belonging is fuelled by a ‘fear of illegitimacy and alienation from home.’ Following the rising voices of Aboriginal histories in the 1980s, a new phase of ontological insecurity arose. As historian Ann Curthoys argues, ‘[S]o keenly aware of being themselves displaced, many non-indigenous Australians have fiercely taken on their new country as Home.’

817 Gorman, 285.
820 Curthoys, “Expulsion, Exodus and Exile in White Australian Historical Mythology,” 17. This grew after the Mabo High Court decision of 1992 that acknowledged Aboriginal presence at European occupation and began the process of native title claims.
The particular ways that Indigenous peoples and cultures are included in environmental work matters here. Miller calls out those working in environmental management who glorify and imitate Indigenous peoples’ knowledge and practice that piggybacks on an ancient and existing sense of belonging, rather than cultivating their own. This, she argues, tracks towards those more damaging forms of cultural appropriation, and remains a misplaced exercise. Instead, Miller advocates ‘self-integrity [that] must be demonstrated not only in the unity and wholeness of settler Australians’ identities, but also in their demeanour as moral agents in the world.’

In her doctoral thesis: Being with Country: The performance of people-place relationships on the Lurujarri Dreaming Trail, Emmanouil explains that in absence of an honest account and recognition of history and true reconciliation process, ‘healing dialogue between Indigenous and settler descendants about living in, working and caring together for country has not yet been fully realised in Australia.’

A deeper sense of belonging and environmental care will remain out of reach until the dominant Australian populace faces up to its past. Miller explains this using Kierkegaard’s philosophical teaching of ‘correct relation’, which depends on both transparency and authenticity. Following Kierkegaard, Miller argues that an ‘existential condition of misrelation’ has resulted in ‘an increasing proportion of settler Australians [being] in a state of conscious despair.’ Despair is defined by American writer David Whyte as ‘a necessary and seasonal state of repair…it is the place we go when we do not want to be found in the same way anymore.’

Throughout this thesis the implicit and explicit privilege of many involved in volunteer ecological restoration work has become clear. It is essential that this privilege is not merely reinforced through environmental work, to the detriment of minorities and marginalised peoples within local places. Ecological restoration work can become more inclusive and more healing by confronting subtle cultural hegemonies and discomforting histories.

To accept despair, to stay with the uncomfortable elements of history, is to be in a state of transition and possibility. Informed by complex local histories, ecological restoration becomes

823 Miller, “Belonging to Country — a Philosophical Anthropology,” 221.
as a site for engagement with particularities of place, to opening up to different knowledges and lifeways and to participating in locally necessary moral work.\textsuperscript{825}

**Expanding ethical practice**

Restoration is positioned to champion an ethic of reciprocity and a culture of sensitivity, inclusion and negotiation so necessary in the Anthropocene. This study highlights that ecological restoration is ripe for what Plumwood calls ‘caring rationality’, which ‘sees ethics and social responsibility as a crucial part of science and of the scientist’s task.’\textsuperscript{826}

Richer encounters and discourses with the more-than-human world can enrich lives and expand the moral community. These arguments are advocated by prominent environmental philosophers in Australia – in particular – Val Plumwood, Freya Mathews and Deborah Bird Rose. The significant implication of Plumwood’s work, writes Mathews, ‘was that environmentalism and struggles for social justice cannot be separated out from one another.’\textsuperscript{827} As Plumwood pleas, ‘[N]ot only is it rationally possible to choose a richer and more generous framework, it is in the present context of ecological destruction essential to do so – in the interests of ethics, prudence AND reason.’\textsuperscript{828} Plumwood explains how through the process of hyper-separating ourselves from nature to ‘justify domination’, we ‘not only lose the ability to empathise and to see the non-human sphere in ethical terms, but also get a false sense of our own character and location that includes an illusory sense of autonomy.’\textsuperscript{829} Countering monological models founded on the ‘self’ and the ‘other’ through intimate experiences of restoration work resists dualistic thinking that supported the colonising project. Thus, generous and reflective attention to all members of a community expands the ethical practice of restoration.

Personal affective encounters are central to this ethical work. As Leopold wrote, ‘we can only be ethical in relation to something we can see, feel, understand, love, or otherwise have faith

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\textsuperscript{825} Philosopher Gretel Van Wieren has written about the ethical and spiritual practices that restoration affords. Van Wieren describes the potential for restoration practice to remedy ‘inauthentic’ ideas about both self and land through transformative practices. Van Wieren, “Restored to Earth: Christianity, Environmental Ethics, and Ecological Restoration.”

\textsuperscript{826} Plumwood, *Environmental Culture: The Ecological Crisis of Reason*, 55.

\textsuperscript{827} Mathews, “Vale Val,” 319.

\textsuperscript{828} Plumwood, *Environmental Culture: The Ecological Crisis of Reason*, 12.

\textsuperscript{829} Plumwood, 9.

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In this way, Leopold anticipates twentieth century Norwegian philosopher Arne Naess, founder of ‘deep ecology.’ Naess argues that we need ‘deep’ ecological thinking. To Naess, deep ecological thinking calls for societal and civil reforms, whereas shallow ecological thinking only calls for technical adjustments. Similarly ecological restoration needs deep histories and critical reflection that demands social and political reform.

Seen as a conversation with place, restoration can participate in ethical multi-species relationships and open restorationists to alternative ontologies. In restoration work, people are forced to face the moral dilemmas of real-world decision making. Indeed, in a paper titled *Living with Invasive Plants in the Anthropocene: The Importance of Understanding Practice and Experience*, Head and others outline the complexities of navigating real world scenarios in environmental management and how these trouble fixed and singular ideas of ontological, epistemological and ethical relationships with place. Similarly, Mathews, in her 2003 book *For Love of Matter: A Contemporary Panpsychism*, articulates the ‘dialogical modality’ that is brought forth through encounters between human and non-human subjects. She explains how ‘[T]he more intricately we enter in this almost infinitely layered system of cross-referencing lives and the more faithfully we observe its inner lore, the more removed we become from a naïve and reductive form of empiricism.’ Elsewhere, Mathews reflects on the performative work of ‘singing up’ the land, as borrowed from Indigenous practice, as both generative and life-affirming.

Reciprocal relationships with nature can be nurtured through the giving acts of restoration practice. From botanist and American Indigenous woman Robin Kimmerer’s perspective, ‘[E]cological restoration can be viewed as an act of reciprocity, where humans exercise their care-giving responsibility for ecosystems.’ Kimmerer explains that ‘traditional ecological knowledge (TEK) of indigenous people is rich with prescriptions, both philosophical and

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832 Head et al., “Living with Invasive Plants in the Anthropocene: The Importance of Understanding Practice and Experience,” 311.
pragmatic, for this practice of giving back to the land. From their teachings we know that reciprocity relies on two fundamental practices: generosity, and, responsibility to care. These practices resist dominant extractive neo-liberal relationships with the non-human world. As social scientist Ella Furness and I explain:

[W]e consider such forms of restoration helpful for cultivating ways of being in the world that allow for humility, vulnerability and courage to take the fore. Participatory ecological restoration practices provide opportunities for people to enter into caring relationships with their human and non-human communities. In doing so, they provide nurturing alternatives to dominant contemporary narratives of crisis, fear and commodification, nurturing both people and place through change.

In Sand, restorationists are forced to steer a ship in unchartered waters, guided by day to day encounters and conflicting emotions. By relinquishing notions of human autonomy and control, an ethic of reciprocity is reinforced, and vulnerability is invited. Such an approach evidently assists in navigating and coping with ecological change. As Jordan articulates, while restoration labour is incomplete and ambiguous, the act of giving may enable communities to live with the uncertainty of the future. Furthermore, to recognise that restoration practitioners are not in control and are working in contested terrain calls in vulnerability. Rose explains that ethics ‘unfold within relationships of responsibility.’ She argues for ethics framed within an open system, characterised by ‘vulnerability and openness to others.’ Vulnerability is a relational experience that opens one up to emotional connection and closeness—a key trait in meaningful relationships. American place-writer Barry Lopez states: ‘the key, I think, is to become vulnerable to a place. If you open yourself up, you can build intimacy.’ These lessons are

839 Much of this thinking underpins Higgs’s description of ‘focal practices’, which, he writes ‘teach us the lessons of fidelity and commitment.’ Higgs, Nature by Design: People, Natural Process, and Ecological Restoration, 191.
842 Rose, 8.
particularly relevant to countering the politics and hopelessness of the Anthropocene and to building meaningful, committed relationships with local places.

Following the publication of Germaine Greer’s book *White Beech*, which documents her experience of working on restoration of her Queensland property, Greer advocated for restoration to be part of the duty of private landholders, recommending that everybody should be buying up land and restoring it. Greer presented a simple ‘problem’ with a simple ‘solution’, ‘cheaper than a world cruise and it’s worth doing.’ She criticised the use of volunteer labour in restoration projects for how this can ‘cheapen expertise’, and called for restoration work to be more purposive and more urgent.\(^{844}\) While the urgency of restoration to contribute to a global ecological crisis is true, such views fail to understand the social and ethical benefits associated with *cultures* of restoration practice. The affective experience of restoration work in a community setting is central to guiding the ethics of the practice and to motivating wider cultural change.

**The significance of mourning**

A final reflection regards the importance of turning towards difficult emotions involved in environmental work. Those who forge strong bonds with a place open themselves up and to confronting the overwhelming realities of ecological decline, extinction and the wider impacts of climate change. As Leopold powerful describes:

\[O\]ne of the penalties of an ecological education is that one lives alone in a world of wounds. Much of the damage inflicted on land is quite invisible to laymen. An ecologist must either harden his shell and make believe that the consequences of science are none of his business, or he must be the doctor who sees the marks of death in a community that believes itself well and does not want to be told otherwise.\(^{845}\)

In 2013, Hobbs wrote a paper that applied Kubler-Ross’s psychological ‘stages of grief’ to relationships with environmental change. He suggested that clashes in restoration approaches and ethics could be attributed to people sitting at different points along a grieving journey


\(^{845}\) Leopold, *A Sand County Almanac, with Essays from Round River*, 167.
through the phases of denial, anger, bargaining, depression and acceptance. Unlike with human death, Hobbs suggests that conservation losses are ‘diffuse, chronic, and uncertain.’ It is useful to extend the metaphorical and practical lessons of grieving to think through restoration cultures. While Hobbs primarily writes about the loss of species and ecosystems, this research demonstrates that loss can come in much more complex and connected ways, and that the communal experience of loss can resurrect a more ethical, relational, collective grief. ‘Grief is a path to understanding entangled shared living and dying’, writes Haraway, who explains that ‘human beings must grieve with, because we are in and of this fabric of undoing.’

In the summers of 2016 and 2019, wildfires swept through remote plateaus of Tasmania’s world heritage areas. These ecosystems, typified by canopies of ancient King Billy Pine (*Athrotaxis selaginoides*), Pencil Pine (*Athrotaxis cupressoides*) and Huon Pine (*Lagarostrobos franklinii*) are remnant Gondwanan ecosystems that, unlike much of Australian bush, do not have strategies to recover after fire. Charred images of the landscapes of my young adult botanical forays and coming of age bushwalks stirred up a new kind of grief. It wasn’t only that I will not stand under their ancient limbs, or that my daughter might not meet them, but that this, other, ancient, magical way of life was coming to an end. Lopez depicts this kind of grief that rose from the ‘sobering realization that the wildness of this landscape is diminishing.’ He explains:

> [W]hen people visit here, there is little of the cause of the sadness I can point to. What most see is beautiful and overwhelming. I cannot show them a kind of history, the long process I know of life in a forest by a river. It is this deep, sprawling, diverse natural history, not objects (a bear, a fish, a bird, a tree) that is disappearing. And because my history is entwined with this history I can’t purge the grief I feel unless I obliterate the affection in those memories.

Writing on extinction, van Dooren considers how the experience of mourning can make us more conscious of our relationships with other species and instil a caring responsibility. He advocates that ‘taking it seriously, not rushing to overcome it – might be the more important political and ethical work of our time.’ ‘The reality’, he writes, ‘is that there is no avoiding the necessity of

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847 Hobbs, 147.
the difficult cultural work of reflection and mourning.’ ‘This work’, he continues, ‘is not opposed to practical action, rather it is the foundation of any sustainable and informed response.’

As van Dooren explains, it is within ‘multispecies entanglements that learning and development take place, that social practices and cultures are formed.’\textsuperscript{850} As it is with our own mortality. In their book \textit{The Emancipatory Project of Posthumanism}, Eliza Cudworth and Stephen Hobden advocate that ‘[W]e need to end quests for transcendence and immortality and understand that we are embodied creatures, amongst others, grounded in place and sustained by socialnatural systems…we need a (re)discovery in the joy of living in our shared mortality.’\textsuperscript{851} Van Dooren’s encouragement to make space for reflection, mourning \textit{and} action offers an important insight for restoration practitioners. The outcomes we desire may not always be possible; the cultural work of recuperation never remotely done, but by staying with the discomfort of that fact, we might afford different possibilities.

We now return to ideas of belonging. To philosopher Martin Heidegger, ‘homelessness’ is a fundamental character of modernity. Hay, paraphrasing Heidegger, explains that ‘[N]ot only are we estranged from home but we do not know that we are estranged from home’, and that ‘[T]his is why we readily tolerate the obliteration of places we hold in affectionate regard.’\textsuperscript{852} It follows that the generation of meaningful relationships based in reciprocity and care nurtured through restoration practice can mobilise political citizenship. The activities of restoration practitioners can help to pave a way for moral activities that counter monological notions of being in the world, hubristic concepts of control, and singular dominant histories.

Ontological security is less stable in the Anthropocene amidst accelerated environmental change that renders our homes unstable. Social theorist Paul Gilroy suggests that, ‘[W]e need to know what sorts of insight and reflection might actually help increasingly differentiated societies and anxious individuals to cope successfully with the challenges involved in dwelling comfortably in proximity to the unfamiliar without becoming fearful and hostile.’\textsuperscript{853} Gilroy’s

\begin{footnotesize}
\begin{enumerate}
\item Van Dooren, \textit{Flight Ways: Life and Loss at the Edge of Extinction}, 4.
\item Cudworth and Hobden, \textit{The Emancipatory Project of Posthumanism}, 122, 157.
\item Hay, \textit{Main Currents of Western Environmental Thought}, 160.
\item Gilroy, \textit{Postcolonial Melancholia}, 3.
\end{enumerate}
\end{footnotesize}
call becomes ever more relevant amidst the ecological effects of climate change. As writer Tom Bristow and I put it:

[C]hanges to species and ecosystems, to seasons and cycles will soon—if they have not already—contort our relationships with place, requiring us to rethink notions of belonging in order to guide ethically responsible, affectively informed actions that account for humans, non-humans and future generations.854

From a position of ontological plurality that takes seriously inter-species relationships, conservation and restoration practitioners are encouraged to ask: What other elements of the place have been lost? What other elements of place are worthy of mourning? What other elements of the place ask for healing? ‘One way to live and die well as mortal critters’, explains Haraway, ‘is to join forces to reconstitute refuges, to make possible partial and robust biological-cultural-political-technological recuperation and recomposition, which must include mourning irreversible losses.’855

In Australia, all people can grieve with Indigenous peoples, not only for the past, but also for the present. Culture, language and lore have all suffered differently in different nations, along with their dynamic ecologies. Useful here is Rose’s argument that extinction should be considered a settler-colonial legacy of ‘both genocide and ecocide.’856 From Indigenous perspectives, loss of species is loss of kin, of language, of culture, of relationship, and of ways of life. Lack of local knowledge and shame of loss means Indigenous knowledge is being adopted from elsewhere and may not support those aspects of ecosystems valued today, and, even when retained may no longer be the best fit because of ecological change. We can collectively grieve the possibilities and relationships and way of being in the world that go extinct along with species and ways of life. Ecological restoration practices can become avenues through which to recognise and respond to this loss and associated shame. Tending to the loss of local knowledge and language may both widen dialogue and enable new

856 Rose, Reports from a Wild Country: Ethics for Decolonisation, 35.

263
relationships to form. 857 We need maps and data and deep time to understand change, but we need stories to keep ancestors, knowledge, meaning and care in the present.

Australians can no longer look to a silenced, curated version of history for hope. Despair and insecurity can pave a path to a new form of hope. It is time to forge new hopefulness in practical action and critical storytelling. Mycologist and environmental historian Alison Pouliot writes insightfully on hope:

[Real hope lies in these deeper realms of language and imagining. Hope is one of those intangible things that begs for logic and then for something less tangible; something based in emotions and belief. Hope arises from the capacity to feel and care. It relies on past experience to project it into the future. Its antitheses – hopelessness and despair – erase the present rendering the future intangible. It also brings us back to the notion of uncertainty. Embracing hope requires getting comfortable with uncertainty. 858]

Hope comes in turning up and caring amidst uncertainty. Hobbs writes ‘[T]he hope provided by restoration does…have to be realistic, and to be based on the reality of the situation.’ 859 The world is always in a state of change. Caring relationships with new and unknown assemblages, voices and practices that approach this fact with generosity are central to flourishing communities. Author Kathryn Wilkinson describes hope as ‘the willingness to continue stepping in again and again and again, even though you don’t know what the outcome will be.’ She articulates the nourishment that comes from ‘[B]eing connected with other people who are also committed to the work despite, and also because of, the uncertainty.’ 860 The act of stepping in is part of the healing process and brings a hope grounded in the present. Every so often, this act is met with a gift, like, when following restoration efforts, the migratory magpie geese (Anseranas semipalmata) that had disappeared from Bermagui, returned again to nest. Every arrival is a promise fulfilled, a reciprocal message of gratitude and communion to those involved.

857 For an example of recognising and working with knowledge loss in eco-cultural restoration see Won, “Exploring Ecological Healing in a Settler Colonial Context: The Elwha River and Moses Prairie Restoration Projects,” 105.
Sand is blown into new configurations as wind, water, love, labour and time intersect. Through restoration practices, relationships with the past, present and future are understood with depth and with openness. New questions can be asked about risk and responsibility, rights and recourse. As waves crash into the coastline, and Pelicans rest again on the sand, it is time to consider the collective lessons from place studies.

Plates 5 & 6 over page show: 5: Peeking through banksias to Long Swamp; a quiet place under tea trees on Old Tilba road; the entry to Bermagui through spotted gums, and a lizard sunning itself on coastal granite. 6: Cuttagee Dunecare stopping for morning tea; black cockatoos at South Lagoon; pelicans gathering at Cuttagee beach, and the view of the coast looking north from Cuttagee Point. Photos by author.
Part C: Research Reflection
C1 | Reimaging boundaries for restoration

Local place studies provide a critical lens through which cultures of restoration can be examined and expanded. The unruly yet appreciated *Pittosporum*, the rust-clad truck that holds back lead tailings, the surprising regrowth within collapsing fences, and, perhaps most importantly, the complex emotions that these characters evoke, push-back on fixed-boundaries and simplistic narratives of decline and repair. Within restoration experiences fodder for new stories is found.

*B1: Dust* narrates a story of ecological imperialism where sensitive arid ecosystems were enrolled in extractive global-trade networks, and, a story of the material world resisting. Tales from The Regen demonstrate how ecological restoration participated in facilitating ongoing extractive practices (by holding back sand-drift). Nature could ‘heal’ and ‘return’ only within temporal notions of settler time. Progress could continue *over there* because restoration was conducted within a confined space. At the same time, restoration practices are found to complicate singular tales of progress through multiple, messy histories that do not conform to a linear narrative. The experiences of restoration form active resistance as they cultivate a love of local uniqueness, provide space for appreciation of beauty, pave out territory for women in leadership roles and build unconventional relationships between private individuals, industry bodies and public management. Today, The Regen continues to trouble singular dominant ideas about opportunity, power and responsibility—acting as a container of memories, silences and toxicity—and a conversation starter about the limits to ongoing ‘progress’ that now must face ever-more-extreme environmental conditions.

*B2: Soil* describes the rise of ecological concern for soil-loss in response to policies that promote a particular relationship with place and post-war stories of unchecked growth. Efforts to retain soil in the alpine ecosystem by putting restraints on grazing assisted the hydro-electric commission wreak its own damage. The nation’s agriculture still remains largely pushed further into the boundaries of private land-parcels, inside which, individual landholder ‘rights’ are largely unchecked. Through the assertion of private-land rights and private management decisions, social structures reinforce spatial boundaries in the Monaro, a region that has resisted clear geographical definitions. Private property rights underpin frontier mentalities and settler-colonial expansion. Soil and pasture are pushed to meet demands of an increasingly-global
market that disconnects production demand from local ecological limits, and requires increasing external inputs to continue (cropping, pasture ‘improvement’ and fertiliser) that are killing off the few remaining areas of remaining native grassland ecosystems. Where an environmental ethic prevails and/or ecological and market forces people into confronting a broken system, restorative practices ensue. Individuals and families turn to different stories and different practices: small patches of rest and restoration here, renewed use of technologies there; a softening of real and imagined boundaries. These practices (ecological restoration amongst them) become personal and political resistance to ‘extraction at all costs’ and to a culture that divides places for ‘nature’ and places for ‘production’, within which production inevitably triumphs. However, such activities remain marginal, outside of the canon of state-governance, largely unsupported by financial systems and social imaginaries, and they operate within land that remains poorly protected. In order to expand restoration efforts in potential and in scale, larger systemic changes are required.

**B3: Sand** illustrates how expert science has responded to rising concerns over ‘environment’ and ‘nature’ in Australia. It highlights the boundaries between places for ‘nature conservation’ and places for ‘people’. These systems reaffirm settler-colonial processes and power-relations. The environment movement of the 1970s produced advocates and labourers, stepping-in and stepping-up where government failed. Volunteers carry the baton, and with it, take the risks and responsibility and accountability away from the systems and actors that produce ongoing damage. *Sand* tells us that individual practitioners are confronted by conflicting emotions and are pushed to face the dissatisfactions of dominant narratives of place; of belonging and of meaning; of care and commitment. As waves crash in, as the road crumbles and as species move, conversations and voices of restoration participants and relationships must expand.

Each place explored in this thesis tells a unique story that emerged from layered histories and biophysical particularities. Yet in all studies, the significant cultural and political work of restoration is identified. It is evident that each project can fit comfortably within the affordances of ongoing cultural-imperialism as reinforced by claims of ‘scientific objectivity’; orientation around a ‘settler-clock’, and reification of structural and ethical boundary-setting. However, also evident is that in relationships with the *Dust, Sand* and *Soil*, deeper work operates; that which subverts hegemonic narratives and power-relations and that pulls people into an inside state of mind. Restoration practice acts as a catalyst for new stories of possibility and for responsible environmental, social and political activities.
In the ecological restoration community, the boundaries of restoration remain contested and 'actively negotiated.' In this final section, the thesis revisits the ways that restoration has been found to participate in reimagining social and material boundaries. It presents thinking from tangential fields to inspire the recuperative potential of the practice, that which often occurs in the contested processes of boundary-making. In particular, the place-studies demonstrate how restoration is expanded through unsettling simple notions of time, through dissolving fixed divisions of space, and through challenging defined ethical boundaries.

**Reimagining time**

There is a marked opportunity for a more pointed critique of linear time that continues to underpin much restoration dialogue and practice. Multiple scales of time shape our short human experience. The disjuncture between evolutionary life and human culture manifests powerfully in the Anthropocene. Through restoration practice, relationships with humans and more-than-human community members are made, and encounters are had, that reinforce rhythmic and cyclical experiences of time over abstracted teleological ones. In *Dust*, different timelines of humans and the earth, of ecological processes, and of half-lives of minerals, determine the need for conjuring up different ways of speaking about time. In *Soil*, objects in the land operate as conduits for conversations between past and present and provide opportunities to reflect on change. In *Sand*, inappropriate land uses repeat themselves amidst a lack of cultural memory.

The stories of restoration in this thesis demonstrate the need to re-script linear notions of time to counter generic, modernist, scientific narratives.

Ideologies of modernity are underpinned faith in human progress in the face of nature and ‘traditional’ societies. The relationships between modernity, colonisation and ecological and cultural devastation make the temporal ordering of ecological restoration problematic. The modern abstraction of time-as-history and space-as-territory was foundational to the formation of

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862 James, *Globalism, Nationalism, Tribalism: Bringing Theory Back In. Towards a Theory of Abstract Community*. For a critique of this, see Latour, *We Have Never Been Modern*.

of secularisation, modern-state sovereignty, the nation-state and modern globalism. As outlined in A2: Setting the Australian Context, progress was essential in order to differentiate the past (of terra nullius a land seen as unworked and untenanted), with an imperial future. Yet, as we see, for example, in The Regen, the past is very much alive in the present and will carry on through ecological conditions, through absences due to extinction and in material toxicity within human bodies in the future.

Ideas of linear progress underpin a normative assumption that environmental problems need technical, not cultural solutions. Eco-modernists promote new technologies and stronger divisions of land for ‘nature’ and land for ‘people’ to cater for the challenges of the future, without paying attention to systemic practices and ethical relationships that cause harm. Indeed, the Breakthrough Institute’s Ecomodernist Manifesto enrols ecological restoration into a modern saviour project promising the ‘decoupling [of] humankind’s material needs from nature’ and the ‘decoupling of human welfare from environmental impacts.’ As sociologist Hannah Holleman powerfully critiques, ‘[m]ainstream environmentalism, which developed within the colonial context and dominated the policy response to the Dust Bowl…offered the illusion of resolution, while the social drivers of the crisis remained intact.’ Within this framing, ecological restoration is nudged into the realm of modernist technological fixes. However, as we have seen in Dust, Soil and Sand, even when masquerading as purely technical, ecological restoration implicates the affairs of identity and culture. It is not the evolution of technologies alone or the ability to find ‘solutions’ to turning back the clock that matters most. Instead, restorative cultures need reflective ecological imaginaries informed by deeply-coupled social and ecological systems, steeped in local stories. Such practices enable critical examination of culturally-supported causes of degradation and pave paths to more strong and just communities in the present.

We have found that often in the contemporary Australian context, non-Western temporalities are favoured only as they suit the modern-settler project through ‘moments of remembering and

864 See James, Globalism, Nationalism, Tribalism: Bringing Theory Back In. Towards a Theory of Abstract Community.
865 For example, see Asafu-Adjaye et al., “An Ecomodernist Manifesto.”
866 Asafu-Adjaye et al. Indeed, geographers Lesley Head and Chris Gibson explain that today’s global, rather than local governance responses to climate change are ‘a classic political expression of modernity. Head and Gibson, “Becoming Differently Modern: Geographic Contributions to a Generative Climate Politics,” 700.
867 Holleman, Dust Bowls of Empire: Imperialism, Environmental Politics, and the Injustice of “Green” Capitalism, 10.
ritual’ or when ‘treated as archaic, residual or quaint.’ Historian Katie Holmes outlines the way that time is enrolled in relationships of power through redemptive environmental action, stating that ‘while the settler present and indigenous past might meet in the imagined space, so far the signs suggest that the indigenous present and presence are remembered so as to be appropriated, forgotten, and displaced.’ We saw in Dust the ways that Wiljikali and Barkindji people are silenced in both the past and the present. However, in Soil we saw how restorative practices were motivating fresh connections, knowledge exchange and access for Indigenous peoples.

The contemporary role of people in an ecosystem cannot be defined by the past. ‘Going back’, ‘holding static’ or even ‘re-creating’ Indigenous practices risk the same charges of impossibility and nostalgia that are placed on ecological restoration, and frames indigeneity as fixed at settlement, ‘without the capacity for change.’ Australia is not then and now, them and us. It is a complex continuum. Australia is, as Instone describes, ‘bound in new patterns of settlement that, while not permanent, mean that any ‘return’ of the land would be a return to a new state, not a recovery of something prior or originary.’

In restoration practice, time in landscape is experienced through connectivity and correspondence rather than simple linear progress. A reimagining of time in this way renders traditional-Western dichotomies more complex (including those of modernity - post modernity, past - present, Indigenous - non-Indigenous) and invites the multiple connections and myriad of relationships operating within a place at the same time into restoration discourse. Ecologist David Freudenberger and theologian C. Dean Freudenberger argue that the values, ethics and knowledge of Aboriginal peoples and the waves of non-European migrant communities ‘ought

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868 James, Globalism, Nationalism, Tribalism: Bringing Theory Back In. Towards a Theory of Abstract Community, 164–65. In his 2006 edition of Globalism, Nationalism, Tribalism: Bringing Theory Back In, social theorist Paul James presents a convincing account of the changes in perceptions of both space and time with the onset of the modern/postmodern world. He provides categorical frames for understanding the human tradition through formations of ‘tribalism’, ‘traditionalism’, ‘modernism’ and ‘postmodernism’, determined on the basis of ways of being in the world through time and space. Philosopher Bruno Latour explains that modernity is formed through the foundational assertion of separating ‘nature’ from ‘culture’ that supports the settler project. Latour, We Have Never Been Modern.

869 Holmes, “Redeeming Landscapes: Ireland and Australia,” 238.


871 Instone, “Fencing in/Fencing and: Fences, Sheep and Other Technologies of Landscape Production in Australia,” 376. Instone is referring here to Gelder and Jacobs’ term unsettled, when they state ‘it exists and continues to exist only through the maintenance of boundaries, administrations and limits’ Gelder and Jacobs, Uncanny Australia: Sacredness and Identity in a Postcolonial Nation, xvi.
to influence the development of an Australian land ethic and ecological understanding.\textsuperscript{872} A de-centering of settler temporalities invites the full kaleidoscope of ‘community’ into the reflexive creation of Australian environmental cultures.\textsuperscript{873} Such an imagination of time aids in decolonising ecological restoration practice and in creating a caring and flexible land ethic.

Ecological restoration can take guidance from temporal theories that allow complexity and continual co-creation. Anthropologist Tim Ingold describes a ‘theory of correspondence’ that lends itself well to the complexities of restoration practice.\textsuperscript{874} This theory allows the mapping of multiple versions of time onto one another. Instead of focusing on a singular path of one object, the focus is on the unfolding and connected relationships. Within Ingold’s theory, plural timelines are never operating in a vacuum, but rather, in correspondence making them inherently social.\textsuperscript{875} Similarly, philosophers Noam Cook and policy analyst Hendrik Wagenaar provide the metaphor of the ‘eternally unfolding present’ from Japanese philosophy, which gives voice to multiple ontologies that exist in local places and interact through continual practice as environmental practitioners face real-world realities.\textsuperscript{876} Further, in The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins (2015) anthropologist Anna Tsing follows the complex threads of non-linear lives of fungi to demonstrate the essential need to reject metanarratives of progress if we are to live well in the troubling present.\textsuperscript{877}

Indigenous Australian cosmologies offer powerful local examples of thinking differently with time.\textsuperscript{878} Through Indigenous Australian ‘dreaming’, ‘dreamtime’, ‘songlines’ and ‘countrylines’, country is alive and in a process of continual becoming. Country is created by ancestors and maintained by all who are responsible for and to it, through an ongoing integration between the past and the future ‘neither static nor atemporal.’ \textsuperscript{879} The world

\textsuperscript{872} Freudenberger and Freudenberger, “Good Relationships: Ethical and Ecological Perspectives of Rangeland Management,” 322.
\textsuperscript{874} Ingold, Knowing from the Inside: Correspondences.
\textsuperscript{875} This theory inspired the plural histories presented in B1: Dust.
\textsuperscript{876} Cook and Wagenaar, “Navigating the Eternally Unfolding Present: Toward an Epistemology of Practice.”
\textsuperscript{877} Tsing, The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins.
\textsuperscript{878} Being open to Indigenous ontologies does not have to take the form of Indigenous exceptionalism or becoming ‘pre-modern’, as the past and the present are not distinct categories. See Latour, We Have Never Been Modern.
continually comes into being ‘defined by the relations between the country and the people who perceive it.’\textsuperscript{880} Through her work with Goolarabooloo people, Emmanouil defines ‘dreaming’ as ‘the creative process through which the country was formed and is enlivened.’\textsuperscript{881} A particular lesson from dreaming is the significance of responsibility involved in continual making of place. As found in place studies, restoration taught practitioners about relinquishing control, about unforeseen and unplanned outcomes and about working within the capacities of place and all its constituents. Meaning can come from ancestral gravitas, motivation can be driven by a duty to act, but the past has no singular moral jurisdiction over future possibilities. The world is, instead, expansive, alive, and surprising.

Ecological restoration is strengthened by expanding its elements of surprise, wonder and potential to act. For example, in \textit{Sand}, restoration efforts became not about returning to the past or acting for the future because it was unknown and uncontrollable. Rather, restoration practice highlighted the multiplicity of timelines that operate at once and the meaningful relationships that can be forged in their intersection, helping practitioners to ‘imagine a world in which openness, rather than closure, is a fundamental condition of existence.’\textsuperscript{882} As introduced in \textit{AI: Understanding Ecological Restoration}, climate change fundamentally challenges the ethical underpinning of ecological restoration practice. With changing climates, the future is unpredictable and dominant ideas of geological, ecological and human timeframes are being reimagined. Understanding how the past and the present are in relationship at the local level grounds history in the particular, thereby cultivating place-based opportunities for cultural and ecological strengthening.

**Softening lines**

Tending to spatial boundaries and limited notions of territory is a powerful step in rethinking restoration relationships. In practice, spatial boundaries are found to be permeable. Boundaries are as much political and cultural, as they are material. Dominant spatial boundaries are imagined; the product of settler-colonial and imperial practices. Thus, they can be reimagined. We find in \textit{Dust} a band around Broken Hill that subverts clear definition and is connected to

\textsuperscript{880} Robin, Dickman, and Martin, \textit{Desert Channels Impuls. to Conserv.}, 74.
\textsuperscript{881} Emmanouil, “Being with Country The Performance of People – Place,” 10.
\textsuperscript{882} Ingold, \textit{Knowing from the Inside: Correspondences}, 9.
local, regional and global realities; in Soil fence lines and paddock boundaries that are reworked and reconfigured along with shifting relationships with place; and in Sand the abrasion and erosion of the road edge and the coastline and reserve edges through time. This thesis conveys place-based tales of species interactions with specific environments, cultures and economies; of political threads of power and global trade, and of migrations in response to changing climate that traverse imagined boundaries. National definitions are insufficient for shaping identity politics and ethics. Instead, it is the local context and community that characterise an appropriate response; a fact reinforced evermore so in response to global climate change as new configurations and communities are made.

Space is evidently as central to cultures of ecological restoration as it is to settler-imperialism, where ‘to mark a line on the ground, to open a clearing, to remove obstacles’ was the ‘colonist’s “first step”’. Ideas of space have shifted from one of a fixed container of object existence, to the continually re-forming product of complex interactions. Social-science critics argue that a definition of space based on fixed Euclidean geometry overlooks the significant role of social factors that shape a relational experience of the world. An individual experience of space operates within state-imposed structures, as Marxist theorists argue. In this ‘conceived space’, power and knowledge-control remain defined by dominant structures rather than by those who inhabit them. Remaining within dominant conceptions of spatial boundaries enrols restoration practices in the perpetuation of power-relationships and class struggles. However, as geographer Yi-Fu Tuan explains, individual activities are powerful in overcoming larger social-structures by ‘cultivating a sense of place’. Tuan’s contribution to spatial thinking affirms the political strength of local place-based restoration practices in their capacity to resist dominant spatial constructions and respond to issues of division and of power.

884 Crang and Thrift, Think. Sp.
886 Lefebvre, The Production of Space.
887 For reflections on class-struggle in space see Harvey, Justice, Nature and the Geography of Difference, 299.
888 Tuan Yi-Fu, Space and Place: The Perspective of Experience: Harvey, Justice, Nature and the Geography of Difference, 301–2. The tension between state-imposed structures and individual experience was resolved by Anthony Giddens through his ‘structuration’ theory, which presented both in relationship through a continual loop, beginning post-structural ideas of space. Giddens, The Consequences of Modernity. Many turn to Philosopher Martin Heidegger’s phenomenological place-ethic as a response to a sense of homelessness, which he argues can be countered through ‘recovery of roots, recovery in the art of dwelling’ (Harvey, 301). I use Tuan’s approach because, contra Heidegger, his emphasis is on cultivation and action, most fitting to restoration practice.
Local context, culture and history are central to cultural conceptions of ecological belonging.\textsuperscript{889} Traditionally, imperial-science aims to define boundaries and produce rules of geographically-based patterns and processes that occur within isolated points on a map. These fixed spatial boundaries are foundational in conservation biology and invasion ecology science yet in practice are more complicated.\textsuperscript{890} Definitions and language must be carefully considered for their ethical weight and associated charges of xenophobia.\textsuperscript{891} As I have written with geographer Dave Kendal and others, ‘[H]ow we define our weeds is part of how we define boundaries between social and ecological systems.’\textsuperscript{892} Multiple studies, for example, scrutinise interpretation of ‘ferality’ within nationalistic Australian identity and Indigenous Australian cultures.\textsuperscript{893} These studies highlight the Western construction of fixed boundaries (spatial and temporal) in determining belonging and challenge simple categorisations. As Robin attests: ‘[N]ew work on feral animals, noxious weeds and wildfire has encouraged scientists to step away from the hyper-separation of people and non-human nature that is embedded in wilderness politics.’\textsuperscript{894}

As ecological systems continue to change, relationships with place are contorted. This requires us to ‘rethink notions of belonging in order to guide ethically responsible, affectively informed actions that account for humans, non-humans and future generations.’\textsuperscript{895} As we have seen in this study, physical and metaphorical lines are being challenged by a combination of human and non-human actors. New species are welcomed because of range-expansion (such as \textit{Pittosporum spp.} in Bermagui), because of practical function (such as non-indigenous trees for


\textsuperscript{890} In Australia, 98 per cent of the Australian citizenship arrived within the last eight generations, making ideas of ‘ferality’ complicated. See Robin, \textit{How a Continent Created a Nation}, 1.

\textsuperscript{891} Invasion biology discourses have been charged with furthering xenophobia. In particular, see Groning and Joachim, “The Native Plant Enthusiasm: Ecological Panacea or Xenophobia?”; Simberloff, “Confronting Introduced Species: A Form of Xenophobia?”.


\textsuperscript{894} Robin, “Global Ideas in Local Places : The Humanities in Environmental Management,” 80. The book \textit{Rethinking Invasion Ecologies from the Environmental Humanities} (2014) takes a humanities approach to the invasion ecology discourse. This collection of essays conveys the complex webs of material and cultural interactions within relationships with non-human species, and articulates that it is human cultural discourses from various fields (including science) that shape conditions for response: Frawley and McCalman, “Invasion Ecologies: The Nature/Culture Challenge.”

\textsuperscript{895} Bristow and Pearce, “Place: Emotional Practices / Geographical Perspectives,” 1.
growth success, shade and soil-retention in Broken Hill and the Monaro), and for aesthetic and memorial value (a single willow *Salix* spp. in Bermagui). The resounding lesson for ecological restoration, is that projects that treat ‘nature’ as a distinct category and ‘moral absolute’, and that overlook its complex relationships with culture and time will fail both practically and culturally.\(^{896}\)

Furthermore, naïve divisions simplify complex ethical dilemmas and decisions about life and death that should not be simple. Anthropologist Laura Ogden suggests thinking with the notion of ‘diasporas’ to introduce mobility and complexity to ideas of belonging, manifesting ‘in flesh as history and politics.’\(^{897}\) We need practices that make space for grappling with the difficult complex decisions that impact cultural perspectives of belonging. Ecological restoration can be such a practice. Restoration practitioners are invited to reflect on structures and boundaries that shape ideas about belonging and negotiate decision-making within local contexts, informed by plural values, knowledges and ethical positions.

Relationships of space in restoration practices can also either verify or redefine relationships of power. The trend towards neo-liberalisation of the conservation estate has implications for territory and access to land. In the increasing privatisation of ‘nature’, settler-colonial ideas remain, manipulated by levers of global markets. The culture of neoliberal economics that supports the meshwork of financial markets instils its supposed notions of fragmentation and individualism within global power systems. Neoliberalism seeps into restoration practice in problematic ways: capitalist markets drive investment and decision-making\(^{898}\); conservation land is increasingly inaccessible to the public; ecological systems are increasingly being written in to tradable commodities through ‘eco-system services’ and environmental offsets, and, governance is gradually transitioning to private bodies and non-government organisations.\(^{899}\)

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897 Ogden, “The Beaver Diaspora: A Thought Experiment,” 78. In a similar vein, geographer Christian Kull considers at what point introduced species should be welcomed as part of a system and given a free ticket to ride; he asks: do plants need passports?‘ Kull, “Do Plants Need Passports?.” See also Frawley and McCalman, “Invasion Ecologies: The Nature/Culture Challenge.”
898 Much of the wealth that funds private conservation and restoration projects in Australia has, troublingly, been made in environmentally damaging resource extraction, or in industries that invest in it. For example, the White Leeds Arid Wetlands project outside of Broken Hill is funded by private wealth generated through transport and earthwork contracting for the mining industry.
899 See Igoe and Brockington, “Neoliberal Conservation: A Brief Introduction”; Higgins et al., “Payments for Ecosystem Services, Neoliberalisation, and the Hybrid Governance of Land Management in Australia”; Fletcher, “Neoliberal...
‘Undeveloped’ land (those regions of Australia less impacted by production or development with remnant ecological values) still outside the national reserve system is increasingly valued for conservation and is bought and sold accordingly. Furthermore, the growth of US-based or ‘global’ non-government conservation organisations such as The Nature Conservancy and The World Bank carry with them United States-centric language and neoliberal political economies. This shift further risks environmental management in local places being driven by the social imaginaries and wants of removed interests, echoing settler-conquest mentalities.

Restoration practice can, in some instances, form cultures of resistance and facilitate the repossession of power and authority to local communities. For example, in Broken Hill through a focus on The Regen and activities reported in this project, a community board of management and the Barrier Field Naturalists Club was reaffirmed. The Regen has become a site for activism, for art, and for community groups and individuals driving change. Yet, this power is limited to a select few. A danger of restorative communities is that they appease the concerns of the people creating satisfied ‘do-gooder’ communities within certain boundaries, making them (and society at large) feel they have done enough to look away from on-going industrialisation and land degradation on neighbouring land. However, in many cases, ecological restoration is a first step, strengthening a politically-aware community that then expand their influences outside the boundary fence.

There are cultures and natures whose erasure and belonging are performed through restoration practice. Today, Indigenous peoples’ participation in ‘country’ as ecological actors is popularly accepted, however, the enduring silencing of the realities of the past inhibits meaningful social change, political voice or access to territory. Independent Indigenous media group *Indigenousx* CEO Luke Pearson highlights the tendency in Australia to massage symbolic gestures ‘not to aspire to a greater future, but to deny our past and our present…[using] them


902 This reinforces the ethical challenge to ecological restoration of ‘green-lighting’ development as argued by Katz and Elliot discussed in *A1: Understanding Ecological Restoration.*


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to pretend that no further changes are required.\textsuperscript{904} It is important that restoration does not become such a practice. If the voices of the oppressed (human and more-than-human) remain quiet, the efforts of ecological restoration will remain limited by settler-stories of untouched ‘nature’ and exclusive ideas of ‘culture’ and ‘knowledge’ validated through straight lines on a map.

Historic exclusion of Indigenous people from their land can also be confronted through restoration practices. As the Aboriginal Woman and Yams project and efforts on private land in \textit{Soil} demonstrate, powerful efforts to reconcile production lands, conservation initiatives and the rights of First Nations peoples exist. Since my visits to Millpost, the Aboriginal quarry has been formally listed on the New South Wales special sites register.\textsuperscript{905} The Ngunnawal and Nambri people and the Watson-Turley family have worked together to celebrate, protect and promote the site. Indigenous archaeologist and anthropologist Dave Johnston explains that the cultural shift is significant here. He says the ‘false news was, you know, from a native title [perspective]…that Aboriginal peoples and farmers just couldn’t be friends, so to speak. Aboriginal people were going to steal their land through this native title’ yet what the Watsons have done is break the mould with ‘a rare collaboration’ by not keeping the discovery secret.\textsuperscript{906} ‘There are so many histories’, Johnston observes, '[A]nd everyone has an angle of their history. But that is shared.’\textsuperscript{907} Also of note is that in 2019, Tasmanians Jane and Tom Teniswood gave half of their 220-hectare property in Tasmania’s East Coast, traditional land of the Luntaytamiriliyuyna people, to the Aboriginal Land Council of Tasmania (ALCT). Graeme Gardner, the manager of the Aboriginal Land Council of Tasmania said ‘the Teniswoods’ decision was an act of profound generosity and genuine reconciliation that should not be underestimated.’\textsuperscript{908} The ALCT plan to manage and restore vegetation in a way that heals country and invites non-Indigenous people to understand how and why that is necessary.\textsuperscript{909} However, while these stories are powerful, and a first step, the management decisions made by Indigenous people in the environmental estate in Australia are in the most part, within property

\textsuperscript{904} Pearson, “I No Longer Support # ChangeTheDate. We Must Change the Country,” 2–3.
\textsuperscript{905} Millpost Stone Axe Quarry Aboriginal Place on NPW Act – Aboriginal Place: Gazette Number 66, Gazette Page 3984.
\textsuperscript{906} Kingston, “One Place Many Stories with Dave Johnston,” 1.
\textsuperscript{907} Kingston, 2.
\textsuperscript{908} Hosier, “Tom and Jane Own 220 Hectares — Today They’re Handing Back Half to the Aboriginal Community,” 2.
\textsuperscript{909} Hosier, 3.
boundaries and policies and systems that continue to override their sovereignty. Here decolonising methodologies remain central to opening up to different ontological and epistemic worlds.

Private ownership and discourses of control have short histories in the scale of living systems. By moving from relations with the land built on dividing and owning (and even of restoration of isolated patches), towards those of relationships and responsibility, ecological restoration can conjure up what Instone terms ‘postcolonial “landscapes of reconciliation”.’ Ecological practitioners understand ecological processes at landscape scales that transcend fixed boundaries; environmental historians narrate movements of individuals, non-human species, tradeable goods and ideas that connect local places to regional, national and global scales, and private landholders understand the importance of what happens next-door. Such connected perspectives can facilitate better ecological and social outcomes.

**Restoring with place**

Restoration practitioners are able to open up to rich encounters that transcend nature-culture binaries, providing alternatives to Western dualisms and expanding the moral community. These experiences, as articulated clearly in the affective practices in Sand work towards collaborative participation and more ethical practice.

The standardisation of ‘nature’ and ‘culture’, and indeed categories of ‘resource’ and ‘the nation’ that furthered settler-colonial powers, endure in dominant restoration discourse. Such framings extract nature from its local specificities and ethical responsibilities, and, in abstracting it, enlist it in national narratives and global markets. As such, certain voices are reified, while others are repressed. In contrast, the restoration projects reported in this thesis are filled with tales of collegiality among human and more-than-human community members and among traditionally repressed minorities. As Higgs states: ‘[I]f ecological restoration exists

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*Main, Heartland: The Regeneration of Rural Place.*

910 Instone, “Fencing in/Fencing and: Fences, Sheep and Other Technologies of Landscape Production in Australia,” 372.

911 Standardisation is a mechanism employed in settler-state powers of repression. Geographer Libby Porter draws on Scott (1998) to conceptualise Aboriginal cultural heritage as ‘statecraft’. This, she writes acts as ‘a method of designing problems in their simplest and most legible terms in order to render state action possible.’ A ‘narrowing of vision’ is performed so as to ‘allow action based on standardised possibilities.’ Porter, “Rights or Containment? The Politics of Aboriginal Cultural Heritage in Victoria Rights or Containment? The Politics of Aboriginal Cultural Heritage in Victoria,” 361.

only to perpetuate the separate estates of nature and culture, it will not break the pattern.\textsuperscript{914} The lessons of this thesis reinforce that in order to respond to the systems that create degradation, we still need substitutes for ‘oppressive rationalist and dualist structures’\textsuperscript{915} that ‘help us acknowledge our ecological embeddedness.’\textsuperscript{916} Opening up notions of just what constitutes ‘nature’ in a particular place facilitates an associated opening of inviolable ideas about culture, knowledge, language and power. These aspects are fundamental to shaping communities.

Multiple participants (both human and not) all act in their own ways to respond to the acts of others and in doing so unfurl together into new configurations. Ecological restoration, explains the SER primer, relies at its simplest on removing disturbances and allowing ‘independent recovery’.\textsuperscript{917} Restoration practitioners struggle to name what ‘mother nature’ can do, if given the opportunity, in part because ‘she’ is not apart from ‘us’ as other. We have heard stories of ‘getting out of the way’, of removing grazing pressures, dismantling fences (or erecting them in some cases) and of patience that leads to ‘passive’ restoration. These reflections highlight the agency of the more-than-human world that is respected in ecological restoration. We saw this in Sand, where the community group invited the assistance of cormorants to remove carp fingerlings, restorationists learn to respond \textit{with} and allow an opening-up for ecological processes to unfold. We also hear stories of species and habitat loss in absence of human activity (for example where historic fire-disturbance regimes in grasslands of the Monaro are absent).

The central role of cultural practice in Australian ecosystems (past and present) means that people have a role to play in ecological processes. The non place-specific trope of letting ‘mother nature’ take her course by removing human pressure lacks the complexity necessary for Australian ecosystems, both past and present. Restoration is a partnership.

It is powerful to imagine restoration practices as restoring \textit{with} place, a conception that opens up discourse to value considerations and ethical possibilities. It gives agency and moral standing to those lives that do not traditionally fit within Western ideas of ‘culture’ despite remaining present, important and integral to community. Restoring \textit{with} place is to participate

\textsuperscript{914} Higgs, \textit{Nature by Design: People, Natural Process, and Ecological Restoration}, 240.
\textsuperscript{915} Plumwood, \textit{Environmental Culture: The Ecological Crisis of Reason}, 36.
\textsuperscript{916} Plumwood, 3.
in local co-becomings of natures and cultures,\textsuperscript{918} to blur Western dualisms and to invite intimacy with more-than-human others. It resists the problematic forces of homogenisation and control and creates meaningful local action at a time of overwhelming global-ecological decline and species extinction. Above all, restoring \textit{with} place embraces diverse, plural, local knowledges and ontologies. Restoring \textit{with} implies a relationship, a conversation, a collaboration that is ever-unfolding.

The ethic that underpinned contemporary restoration discourse attempted to break down dominant Western dualisms. At the 2013 Society for Ecological Restoration Conference in Madison, Wisconsin, Fawn Youngbear-Tibbitts, a member of the White Earth Band of Ojibwe First Nations people commented that Aldo Leopold, who proposed a ‘land ethic’, was ‘just the first white guy to get it.’\textsuperscript{919} The land ethic has also been described as ‘ecofeminist friendly’, because of its focus on perceptivity and receptivity.\textsuperscript{920} It is the breaking down of dualisms and a particular relational and responsible ethic that matters here. The role of people is always unfolding, responding, weighing-up and reacting. As such, it is open to flexibility and inclusivity and can be negotiated (for example, as demonstrated in \textit{Dust} with participatory action research), wherein the ethics and values that underpin local projects and local cultures are actively navigated and articulated.

Evidently, the \textit{knowledges} and \textit{cultures} that are unveiled \textit{with place} offer important lessons to restoration ecology science and to cultural change.\textsuperscript{921} Today, community-based knowledge and conservation is presented as necessary to counter the abstraction and lack of engagement of top-down Western science.\textsuperscript{922} Recent directives of the Convention on Biological Diversity

\begin{thebibliography}{99}
\bibitem{918} To restore \textit{with} place draws on leading work from cross-cultural studies, history and philosophy of science, and cultural geography that take both agency and sentience of non-human participants.
\bibitem{919} Youngbear-Tibbetts, “Panel: Indigenous Arts and Sciences Earth Partnership: Sustaining Community Partnerships through Cultural Connections and Ecological Restoration Education.” Leopold’s ‘land ethic’ encourages interconnectedness and beauty with an evolutionary ecological world-view: Sheppard, “Chapter Eleven : Beyond Visual Resource Management : Emerging Theories of an Ecological Aesthetic and Visible Stewardship”; Leopold, \textit{A Sand County Almanac, with Essays from Round River}; Leopold, \textit{A Sand County Almanac and Sketches Here and There}. For more on the history and significance of Leopold’s work see Meine, \textit{Aldo Leopold: His Life and Work}.
\bibitem{920} Norlock, “Building Receptivity: Leopold’s Land Ethic and Critical Feminist Interpretation,” 507.
\end{thebibliography}
Aichi Targets and Intergovernmental panel on Biodiversity and Ecosystem Services call for greater public engagement in science, acknowledging that enhanced inclusivity is likely to produce longer lasting and more holistic, place-based approaches to environmental conservation. Yet the significance of inclusive practice and plural knowledge extends beyond material outcomes, quashing ongoing colonising tendencies. Ecological restoration can operate as a powerful platform to expand the kinds of knowledge that are valued, responding to the implications of singular dominant discourses. Haraway advocates ‘situated knowledges’ as resistance to the hegemony of ‘militarism, capitalism, colonialism and male supremacy.’

As identified in Soil, science became ‘the voice of nature’ in the post-war era, and its expertise has tended to ‘replace traditional, individual and observational knowledge with a more universal knowledge.’ Science professes to work at landscape and population scale. Quality ecological science is pivotal for guiding urgent conservation and restoration efforts. Yet when it comes to local restoration practice, science will always be strengthened through generous engagement with other epistemologies. As demonstrated, the dismissal of place-based knowledge does not discriminate between people. Waves of migrant communities who bring fresh cultural perspectives of human-environment relationships are also overridden by discourse that treats Indigenous and settler ideas as incommensurate. This thesis demonstrates how ecological restoration cultivates situated knowledges that imbue ideas of ‘nature’ with a particular viewpoint and offer a political edge. Situated knowledges also impart responsibility, generosity and care, with moral obligation accompanying knowledge. Importantly,

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923 Indeed, Target 14 highlights the role of restoration in meeting the targets. It read: ‘By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and wellbeing, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.’ Convention for Biological Diversity, “Strategic Plan for Biodiversity 2011–2020 and the Aichi Targets,” 2. The specific context matters here. ‘Community’ can mean many things. In the Australian context ‘community’ or ‘local’ knowledge is used indiscriminately between Indigenous or non-Indigenous local peoples, and who gets to speak for the ‘local’ is contested by all parties.


925 Haraway, “Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective,” 581. To Haraway, situated knowledges work as ‘feminist objectivities.’


927 Muir, The Broken Promise of Agricultural Progress: An Environmental History, 115.

928 Similarly, see Thom van Dooren on how knowing more enhances ‘accountability to others.’ Van Dooren, Flight Ways: Life and Loss at the Edge of Extinction, 9.
experiences of *somewhere in particular* invite reflections on history and provide more than just information with which to act; rendering action a moral imperative.

The language of restoring *with* place that emerged through the thesis participates in a shift in the languages for human/environment relationships. Relational ontologies and the moral standing of more-than-human others are working their way into popular discourse. Personhood, agency and sentience are increasingly being recognised within the nonhuman world in academic, legal, policy and popular contexts. These principles are challenging Western legal systems to interpret and apply concepts within litigation cases and to integrate complex environmental, social and economic issues into public policy. In the academic context, posthumanists reject the separation of nature and culture, human and non-human beings, cultural geographers recognise the agency of non-human others, and environmental ethicists challenge the limits of Western metaphysics.

It is important to remember that problematic assertions of hegemonic structures remain present in these discourses. Povinelli asserts that posthumanism and much cultural geography thinking remains within western ontological frameworks and represses minority voices. Geographer Juanita Sundberg brings to light the need to decolonise posthumanist geographies that have as their foundation Anglo-European centring of nature and culture. She encourages the fostering of ‘geographical engagements open to conversing with and walking alongside other epistemic worlds.’ To Sundberg, ‘[T]he exciting and challenging task ahead involves walking and talking the world into being as pluriversal…in which the multiplicity of living beings and

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930 Dovers, “Still Settling Australia: Environment, History and Policy,” 2000. These discourses must also struggle with remaining open to processes and change (even at geological timescales) so as not to argue for the ‘rights’ of ‘nature’ in a way that holds them fixed at a particular point in time.
objects are addressed as peers in constituting knowledges and worlds. Importantly, this task opens to appreciating difference in collaborative learning; what Sami scholar Rami Kuokkanen calls ‘participatory reciprocity’, whereby Indigenous epistemes are written into the present rather than romantically drawn on as tools form the past. Importantly, the emergence of a new field of ‘critical Indigenous studies’ brings Indigenous scholars to the centre and pursues ongoing troubles of centric, Western research and practice. Restoration discourses need to remain open to non-Western ontologies and to recognising Indigenous ways of natural and cultural land management as valid in their own right, as well as being central for carrying out responsibilities to country.

New inclusive dialogues with place are central to expanding recuperative potential. As Plumwood advocates: ‘[W]e need a cultural paradigm shift in many linked areas to adopt a partnership or dialogical model of relationships with nature in place of currently disabling centrist control.’ It is useful here to return to Higgs’ ‘focal restoration’ for its potential for participation, positive political change, and the cultivation of ecological citizenship. ‘[C]ultural practices and beliefs are being reconfigured and generated anew to reflect the character–historical, literal, and metaphorical–of a place’ through restoration enacted this way, Higgs writes. As particularly evident in Sand, restoration practices that face up to uncertain futures focus on practice and relationship over outcome. Framed as both dialogical and focal, restoration can be an inclusive process, co-produced with place, that allows for co-existence of multiple lifeways, and thus remains open-ended.

A focus on discourse also invites expansion of the metaphysical limits of the discursive community, weaving plural cultures and more-than-human others into ethical relationships.

A ‘sideways glancing’ between different voices can allow plural relationships with the land to

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936 Sundberg, 42.
937 Kuokkanen, Reshaping the University: Responsibility, Indigenous Epistemes, and the Logic of the Gift, 118.
939 Altman, “Indigenous Futures on Country.”
941 It is my conviction that focal restoration remains a significant, underappreciated and, at the present time, highly relevant contribution to ecological restoration praxis. For a thorough overview of the philosophical challenges and social aspects of ecological restoration see: Spencer, “Recreating [in] Eden: Ethical Issues in Restoration in Wilderness”; Spencer, “Ethics and Restoration: A Fascinating and Vexing Time.”
co-exist without one being subsumed within the other.  

Verran describes for example that, as scientists seek lessons from Aboriginal land practices, they can provoke ‘postcolonial moments: occasions for theorizing, for telling differences and samenesses in new ways’ and lead to making amends for historic injustices.

Ecological restoration in settler-colonial settings can take heed of Verran’s call for philosophy to be enrolled as an ‘activity that attempts to attend to ultimate metaphysical questions, but also as an activity that thinks about how, in the face of profound difference, to go on together in ways characterised by good faith.’ As Albrecht and others write, when these differences can be held in ‘good faith’, there is a ‘convergence of Culture, Ecology, and Ethics’ that enables multiple ontological and epistemological perspectives to stand side-by-side. ‘Good faith’ then, requires critical self-awareness and reflexivity. In the Australian context, this ethical work is about offering ‘suggestions for how to effect valid crossing over in knowing between science and the Dreaming.’ The multiple existences continue in conversation as places continue to unfold.

Within Indigenous ontologies are important lessons to expand limited Western views of the moral community and provide alternatives through which to navigate relationships with the world. Embracing agency of both non-human and human actors opens up an ‘enlarged understanding of how knowledge is co-produced, experienced, and storied.’ Australian geographers Sarah Wright, Kate Lloyd, and Sandy Suchet-Pearson have an ongoing relationship with Yolgnu community and Bawaka country (in Arnhem Land). Their rich body of work is a leading example of how research, practice, and writing can challenge dominant western ontological and epistemological boundaries. By publishing with ‘Bawaka Country’

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as a co-author, they present a Yolgnu ontology of co-becoming and what it might mean for natural resource management. The Yolgnu ontology of co-becoming requires a rejection of the nature/culture binary:

as we gather miyapunu mapu, we issue an invitation to you, and to NRM, to open yourself up to the reality of your connections, to the processes of becoming though which we (human and more-than-human beings) know the world and the world knows itself. We invite you to realise that human and more-than-human beings never are – not isolated, not static, not known – but only become as they constantly emerge together. And that this togetherness requires an attention to the ethical responsibilities of care that emerge when we live, think, act and attend as part of the world, rather than distinct from it.

In it, they explain that “‘things’ can only come into “being” through an ongoing process of be(com)ing together. They are never static, fixed, complete, but are continually emerging in an entangled togetherness.’ Beyond this they emphasise ‘key lessons around attention, responsibility and ethics.’ Such work is a powerful demonstration of being open to mixed epistemologies and ontologies, and ‘imagining new categories’ towards which restoration efforts can strive.

The concept of ‘deep listening’, present in many Aboriginal cultures, is also inspiring here. Known as ‘Dadirri’ in the Ngungikurungkurr language of the Daly River in the Northern Territory, and as ‘Gulpa Ngawal’ in the Yorta Yorta language of the Murray River in Victoria, it is described in English as ‘deep and respectful listening which builds community.’ As cross-cultural scholars Laura Brearley and Treahna Hamm explain, deep listening is informed by notions of community and reciprocity and cultivates respect-full relationships with place. Deep listening also requires ‘listening with a sense of responsibilities to the stories that are told’, and ‘listening and observing the self as well.’ As Cocks argues, we need a ‘willingness to protect that which is precious and sacred and to respect even that which is beyond our limited human experience’ in order to survive as a ‘global community.’

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952 Verran, “Re-Imagining Land Ownership in Australia,” 241–42.
954 Brearley, 13.
Through restoration practice, opportunity exists to enquire and listen deeply and to hold the knowledge with respect. Diverse worldviews can co-exist and strengthen the ability to respond while overlapping in practical management activities. It is important to not simply pick out those bits of local histories that fit within an uncritical story of ecological restoration. Critical histories can expand the capacity for deep listening and healing.

‘Country’ is a concept and a living practice that has much to offer recuperative relationships with place. For Amberlin Kwaymullina, ‘seeing’ the land as ‘a living, connected being’ is the realisation that she hopes non-Indigenous Australians can share with the First Peoples of this continent. Rose has written that ‘country’ is Australia’s ‘greatest gift to the world.’ From the perspective of restoring in ‘country’ there exists, as Emmanouil so poignantly writes, an ‘opportunity for reconciliation between settler and Indigenous peoples, and perhaps, to address the ecological crises that characterise what ecological humanities scholars are calling the Anthropocene.’ In ‘Country’, we find guidance for forms of belonging that transcend nature/culture and Aboriginal/settler divides and an accountability and responsibility so urgently needed and in doing so opening ‘new metaphysical terrain.’

Opportunities evidently exist to connect ecological restoration to practices of what John Cameron and Craig San Roque call ‘coming into country.’ In each study, participants spoke of how their connections with the places allowed them to empathise with Indigenous peoples and cultures, like Broken Hill Landcare’s Wayne Lovis, who explained that he feels connected to the land ‘in a way, like maybe Aboriginal people feel connected to the land.’ Such feelings drive restoration activities by calling people to act, and, are also reinforced through meaningful restoration practices. With this in mind, ecological restoration practice can contribute to what Wright and others call ‘ontological opening’ of Western research practice, by drawing on both

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959 Emmanouil, “Being with Country The Performance of People – Place,” 2, 3. Emmanouil considers processes through which non-Indigenous Australian’s can understand and experience ‘country’ in an Indigenous sense. She articulates four ‘principles’ of ‘relationality, performativity, locatedness/situatedness and generative practice, [that] hold relevance to both Indigenous and Western ontologies, but not necessarily in the same terms.’ Emmanouil, 67.
961 Cameron and Roque, “Coming into Country: The Catalysing Process.”
962 Lovis, “Interview with Author.”
western and Indigenous categories to guide practice and call up ecological health. However it is imperative that this is done in ‘good faith’, that difference is respected, and that power is distributed so as not to turn relationships with Indigenous peoples and knowledges into another form of consumption. The stories in this thesis demonstrate that through restoration practices, practitioners are reflecting on belonging and boundaries, local histories and ecological realities in a way that motivates further self-reflection and practical action. A decolonising praxis for ecological restoration encourages a relational way of seeing and listening, inviting thinking with rather than just about ‘peoples, subjects, struggles, knowledges, and thought present’.963

Ecological restoration framed as restoration with place can activate an ethic of responsibility, a call to action and a promise.964 The more that we know, the more we are called to speak up and to act. The more engaged with and committed to local human and more-than-human communities we are, the more responsible we feel, and the more able to respond we become. Difficult challenges will still require navigation, but by conceiving of activities as co-productivity, the capacity to be reflective, ethically-accountable and flexible in response to unforeseen outcomes is enhanced.

Significant political and moral reimagining of places, practices and social networks are called up through restoration work. Ecological restoration projects and the lessons from them provide alternatives to the systems and cultures that sustain past and present degradation. Ecological restoration practice can participate in redefining and articulating what fits where and clearly stating why and how temporal, spatial and moral boundaries are being used, rather than assuming they are unimportant. Herein lies the political significance of ecological restoration.

964 Rose draws on philosopher Emmanuel Levinas, to whom ethics must be grounded in real-world encounter and cannot exist within logics of control and manipulation. Rose, Reports from a Wild Country: Ethics for Decolonisation.
This section has focused on the ways in which ecological restoration can move from narratives that reaffirm settler-colonial and modernist-industrial boundaries and structures of power, towards those that actively resist them. As introduced in *A1: Understanding Ecological Restoration*, a strength of ecology is its ability to think in holistic ways and provide a systems perspective that counters the limits of reductionist thinking. Restoration practitioners will always participate in flows of resources, knowledge, labour and culture that are, to some extent, outside of their control. Recognising this enables restoration practitioners to challenge and resist inadequacies of policy, to call out problematic power-relations embedded within simplistic bounded stories of decline and return, and to pave the way to new narratives of place.
C2 | Towards recuperative practice

Ecological restoration is active in framing how the past is understood and how the future is imagined. It is a practice that can be shaped in many ways, by many actors, resulting in complex and often contradictory cultural and ecological outcomes. Restoration is a social practice filled with the messiness of real life.

Climate change and the recognition of Indigenous peoples’ relationships with the land have disrupted the base tenets of ecological restoration, calling into question the norms and assumptions that validate its practices and position its contemporary relevance. Ecological restoration at its best is inclusive, openly reflexive and politically engaged. Active work is required to ensure restoration projects intervene in local communities responsibly. Critical histories assist in guiding the shape this takes according to the needs of individual places.

In this thesis ecological restoration is presented as neither ethically nor politically benign; neither inevitably democratic nor inclusive. In Australia, it participates in framing national identity and environmental culture. It bolsters certain ideas of belonging and reaffirms the peoples and knowledges that are respected and silenced in environmental work. Amidst vastly different social, political and economic contexts of the 1930s, 1950s and 1970s the projects covered in this thesis demonstrate how ecological restoration responded to significant shifts in culture, society and science and in turn shape local politics and social movements. In each place, ecological restoration was employed as a response to material messages from the land that local practices ran counter to ecological realities. In each place, ecological restoration assisted extractive industries (mining, grazing, tourism) to continue in the wider region, either directly, or through the green façade that distracted from ongoing damaging land uses and regulatory failures. Ecological restoration participated in ongoing structural and material harm by further silencing repressed voices, overlooking processes of moral-othering, facilitating the evasion of industry and government accountability and providing an alternative to desperately needed policy reform. This thesis affirms that ecological restoration needs to be partnered with the mutual endeavours of political and ethical critique.

At the same time, this thesis demonstrates that the individual and communal social practices within restoration projects contest dominant imaginaries and cultivate generous relationships
with place. The stories within demonstrate how human–environment relationships that borrow heavily from colonial visions of Australia are repeatedly challenged through meaningful engagements with material ecologies. Here we find that cultures of appreciation, love, care and commitment to local ecologies are present in Australia’s settler history and continue today. Questions of responsibility and justice are uncovered. Moral boundaries are pushed, and people weave themselves into committed local relationships through affective experiences. These subversive characteristics of ecological restoration can influence its larger contribution to much-needed societal change.

This thesis contributes methods through which the cultures that sustain past and present degradation can be called out and confronted and the political and ethical work of ecological restoration can be brought to the fore. The hybrid methods of environmental history, political ecology and decolonising methodologies have been presented as a critical lens to identify, understand and ultimately address the harms that need tending. They help to unpick the tangled threads of hidden, harmful and worn-out social imaginaries, and, like darning holes in threadbare socks, weave ecologically and culturally responsible possibilities in their place. The three-fold technique of history, practice and reflection employed in this thesis is provided as a model. The technique uncovered stories of lost and found birdsong and evoked voices too often repressed; revealed hidden seed in the soil and noticed movement and moments of stillness. Things missing from the past were able to be understood within their social and historical contexts: a lack of realistic ecological expectations, a lack of bold environmental policy and a lack of moral reflectivity, none of which could co-exist while the settler-colonial project and culture of post-war growth endured.

Specific tools are presented that expand local understanding and restorative potential. In Dust, historical study, social research, community art practice and participatory action research provided a toolkit through which multiple stories, stakeholders, values, voices and passions were mobilised and given new life. In Soil, historical study, social research and reflection (via objects in the land) uncovered place-based personal and familial memories and demonstrated the ways in which restoration practices are deeply entwined with daily lives and cultural memory. In Sand historical study and participatory research work with volunteer restoration groups gave voice to the affective experiences and emotional work involved in ecological restoration. Finally, critical reflection affirmed that spatial, temporal and moral boundaries remain in need of troubling—a reality that restoration practitioners recognise through practice. Locating individual projects within their historical, geographical, social, political and economic
context is as essential as locating them in their ecological one if we are to understand the pathways to degradation, to restoration, and to wider recuperation.

The urgency that climate change presents only sharpens the need for a turn towards complexity and uncertainty. Restoration practitioners are forced to dwell in the disconcerting space between inattentive hopelessness and irresponsible optimism. Haraway implores that at the present time ‘[O]ur task is to make trouble, to stir up potent response to devastating events, as well as to settle troubled waters and rebuild quiet places.’ Staying with the trouble in ecological restoration is to confront the role it plays in aligning with particular and problematic ways of imagining place and to dwell deeply in the present rather than holding on to ideological and imaginary pasts. The present challenges call for attuning senses to local stories, local lives, and local opportunities. Van Horn writes: ‘[R]econciliation ecology asks of us that we anticipate the impacts of our actions and take responsibility for our historical shortsightedness.’ Responsible restoration looks both back and forward. Locally-embedded restoration projects that take heed of multiples histories and weave together moments in time; that recognise new configurations and lines of connectivity, and that welcome broader notions of the moral community can actively resist settler-colonial and modernist power-relationships (that were foundational to framing Western science practices) by forging new, generous relationships. They can help to identify and resist the systemic nature of environmental injustices and drivers of environmental harm, rather than responding only to their outcomes. This is a sharp example of how restoration ecology can learn from ecological restoration practice. Ecological restoration responds to past wrongdoings and provides space for the cultivation of new ethical relationships with place. Conducted this way, ecological restoration can be a powerful site of conversation, commitment and care.

**Beginning with place**

Ecological restoration does not work in isolation or stop at the boundary fence. Restoration projects are just one aspect of plural individual and community relationships with place. As this

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965 The use of the term disconcerting here draws on post-colonial work of disconcertment of metaphysical difference and knowledge exchange. See Law and Lin, “Cultivating Disconcertment.”


thesis has found, the origins of ecological restoration are in working landscapes. Practical and personal motivations for ecological restoration are diverse. When built from the diversity of existing relationships, interests and strengths found in local communities, restoration projects and restored environments are more likely to thrive. Diverse value systems can be simultaneously supported through the shared desire for flourishing ecological and social systems, as was the case with graziers and grassland ecologists in *Soil* and fishermen, conservationists and cormorants in *Sand*. Conservation programs, policy documents and the wider restoration community have an opportunity to respect local people and local knowledge and to bridge traditional chasms between those in productive or preservationist camps.

Place studies convey how restoration practices participated in defining what is considered sacred. This characteristic of restoration is a powerful one, amidst the overwhelming reality of life filled with change, struggle and extinction. Through ecological restoration, individuals do *something* at the scale of daily lives, inscribing a hopeful and generous story in response to the overpowering global phenomenon of climate change. Through restoration practice, people engage in positive and nourishing relationships with local environments, even as they undergo change. In part, this is done by telling stories rich in creativity, love and wonder. Thus, restoration practice and discourse need the humanities as much as they need good science. Clear, creative language that welcomes uncertainty and emotion, with ‘vision and poetry’, can better deal with the complexities faced in practice while also enhancing resonance with policy-makers and the general public. Similarly, there is a place for all forms of creative projects that convey intimate stories of situated experiences of restoration. These stories are bioregional, personal, and performative and hold the potential for strong cultural change.

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970 I consider the significance of storytelling to ecological restoration with philosopher Thom van Dooren’s definition of storytelling in mind: ‘a dynamic act of “storying” the world, utterly inseparable from lived experience and a vital contributor to the emergence of “what is”’. Van Dooren, *Flight Ways: Life and Loss at the Edge of Extinction*, 10.
972 See Jørgensen et al., “Policy Language in Restoration Ecology.”
973 For example, The University of New South Wales and Landcare Australia have partnered in a storytelling project called *Rescue*, a platform to document and share restoration stories with an aim to create a podcast. It is a powerful collection of the emotional, personal, community meaning behind restoration work, premised on the idea that ‘[I]n rescuing we too receive something in return.’ Miller, “About Rescue,” 1.
974 For a powerful example of restoration practice involving a literal performance to create ‘living myths of regeneration’ at the *Mallee Fowl Festival* in Central Victoria see Mathews, “The Eco-Genesis of Ethics and Religion,” 281.
I began this project presuming that I would conclude with a diagrammatic guide to assist practitioners to address the ethics of ecological restoration differently. Through the process of this work I have become more wary of prescriptive boundaries and fixed guides. This work reinforces that a principle-first and ethics-based approach to defining ecological restoration will retain the flexibility necessary to adapt to the messiness of complex and changing social and ecological systems, and at the same time enable restoration work to participate in the continual maturing and coming into being of cultures and communities.975

I am drawn to contribute to the evolution of ecological restoration as a flexible and inclusive place-based practice. This can be achieved through wider political and moral conversations about human-environment relationships and what is valued in a particular place. The contribution of humanities is in gathering rich, complicated, troubling and inspiring local material from which restoration can build. At the most basic level, the role of the historian is to ‘story-tell place.’976 Through probing questions, the complex specificities of place with which ecological restoration converses can be better understood. This in turn expands pathways to response and capacities for inclusive action. Therefore, I end not with a template, but a list of questions that can guide an inclusive, place-based principle for ecological restoration.

William Cronon finishes his powerful piece *A Place for Stories* with the following six questions relevant to the project at hand:

- What do people care most about in the world they inhabit?
- How do they use and assign meaning to that world?
- How does the earth respond to their actions and desires?
- What sort of communities do people, plants and animals create together?
- How do people struggle with each other for control of the earth, its creatures, and its meanings?
- And on the grandest scale: what is the mutual fate of humanity and the earth?977

This research adds the following:

- What cultures and cultural practices led to ecological degradation here?

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976 Brown et al., “Can Environmental History Save the World?,” 17.

What broader wounds need attention?
Who has the power, who is left out and where are the ongoing injustices?
What kinds of futures are desirable to the expansive local community?
What unique ecological values exist here now?
What are the unspoken questions with difficult answers?

Such questions can only be answered at the very local, intimate scale and with consideration of complex local histories.

Ecological restoration can participate in the important work of reimagining the conceptual boundaries that are implicated in issues of environmental and social justice. If carried out in this spirit, restoration offers a powerful catalyst for a ‘moral engagement with the past in the present.’ This work is what makes ecological restoration recuperative.

**Getting on together**

The past remains forever our inheritance, in wounded places and inadequate histories. Ecological restoration works in the flotsam of the past and in Australia, honest conversations with the past are overdue. Restoration narratives that propose complete healing overlook the fact that the need for healing is great, diverse, and will always be incomplete. The Australian ‘colonising gaze’ endures. A particular telling of histories of land degradation and restoration can apologetically frame an assumption that the people of the past did not know better; they were not as enlightened as people today. Such uses of history lack real-world complexity and do not tackle the enduring outcomes of the past. These ‘nursery’ versions of history are ‘deployed to support the institution or group that’s telling the story’, as Muir puts it in *The Broken Promise of Industrial Agriculture*. They endure as social imaginaries and industrial practices, top-down schemes and policies out of touch with the needs of both local ecologies and local communities. Yet, as we have seen in each place in this study, the ecological and

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978 Thanks to Ross Colliver for the conversation that inspired this question.
980 Deborah Bird Rose provides (after Blanchot) the useful concept of a ‘wounded space’, that, through continual impacts of colonial constructions ‘torn and fractured by violence and exile, and that is pitted with sires where life has been irretrievably killed.’ Rose, *Reports from a Wild Country: Ethics for Decolonisation*, 34.
983 Muir, *The Broken Promise of Agricultural Progress: An Environmental History*, 156.
cultural realities encountered through restoration practices challenge deliberate ‘processes of “unremembering”’, and can draw individuals into a new state of mind. Messages come in dust storms, soil erosion, and crumbling coastlines; through disappearing species and disappearing languages and ways of life. A critical lens and attentive practices are necessary to ensure that different times, voices, and losses do not pass by unnoticed.

In A2: Setting the Australian Context, I argue that preservationist conservation built around a traditional Western framework separates nature from culture and is incommensurate with Aboriginal peoples’ ontological frameworks, rights and responsibilities to country. Conversely, ecological restoration can involve intimate relationships between people and the natural world and bring these relationships into focus. Indigenous people, practices and lore are too-often selectively mined for those aspects that suit ongoing settler control, while their enduring sovereignty, cultures and knowledge are misrepresented and misrecognised. When carried out in ‘good faith’, ecological restoration projects enable multiple knowledges and worldviews to co-exist. As the projects in this thesis conveyed, (for example the Aboriginal Women and Yams Project and the partnership forged between the Watson-Turley family and the Ngunnawal and Nambri communities at Millpost) ecological restoration can be a site of generous cross-cultural partnerships; practices within which combined cultural and environmental healing takes place.

Remembering, recognising and responding through commitment to ongoing change is an act of recuperation and decolonisation. Yet Australia needs to move further. The Yolgnu word ‘Makarrata’ conveys speaking up, and moving beyond, together. It is this culture that contemporary Australia still struggles to embrace. In 1979, the National Aboriginal Conference called on the senate to negotiate a treaty with Australia’s Indigenous people that never eventuated. For it they selected the word Makarrata because it ‘signifies the end of a dispute

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984 Main, Heartland: The Regeneration of Rural Place, 169.
987 This is also represented in Haraway’s concept of ‘getting on together’–a phrase which she borrows from the Australian idiom that starts with the present, informed by ‘less denial and more experimental justice’. Haraway, Staying with the Trouble: Making Kin in the Cthulucene, 28.
988 Botsman, “Makarrata Dreaming.”
between communities and the resumption of normal relations, and a ‘coming together after a struggle.’ This term was again used in the recent *Uluru Statement from the Heart*, developed by a First Nations Constitutional Committee to request ‘a ‘First Nations Voice’ in the Australian Constitution and a ‘Makarrata Commission’ to supervise a process of ‘agreement-making’ and ‘truth-telling’’ between governments and Indigenous peoples. The statement and recommendations were rejected by the federal coalition government. Until the Australian Nation and its diverse people come together to acknowledge past harms and unite in genuine responses, social and ecological recuperation will remain limited.

The environmental processes that restoration supports are not private or bounded issues. They are public goods and culturally significant lifeways that nurture our existence. While individuals and community groups sustain great effort, government and industry evade responsibility and state environmental controls enable ongoing ecological degradation. Furthermore, in all three regions that this thesis considers, contemporary state-sponsored infrastructure projects continue to reproduce ill-informed ecological imaginaries and prolong inappropriate land uses. It is more urgent than ever that ecological restoration be re-politicised; that the community push for policy responses as much as for practical action, and that restoration enables local voices and local meaning that can democratically demand locally-specific change and visionary political leadership. Restoration can participate in society as a political and moral tool to unbind settler-colonial narratives of place and build committed, caring relationships. However, this work is required in scales much larger than small community planting days and private efforts in corner paddocks. Larger societal discourses about environmental decline, climate change and the rights of Indigenous peoples are desperately needed.

**Critical histories for ecological restoration**

The practical processes of ecological recovery can be aided by technical standards, but the cultural and moral work of restoration projects relies on place-based stories and political engagement. This is also a place for stories of violence and corruption, of fables and nightmares.

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989 Botsman, 2.
that warn us of what our world becomes without caretakers. The present global condition demands practices of connection, of reflection, of getting on together; of gratitude and respect and remorse that treasure our world as a generous life-giving place.

The shift of the role of history in ecological restoration discourse from a template to a guide affords an opportunity for the moral and political work of ecological restoration to flourish. This thesis has argued that ecological restoration can draw on its own history and from the history of the places within which it works to learn from past mistakes, to forge new relationships, and to inspire bio-regionally and culturally responsible interventions. It has demonstrated how critical histories, informed by the fields of environmental history, political ecology and decolonising methodologies, can expand the capacities for acknowledgement and response to harmful human-environment relationships and their social and cultural legacies. The wider role of history in ecological restoration is to ensure that it does not become a project of re-engineering and domination, unmoored from ethical considerations at local scales. Instead, history can inspire urgent, committed relationships with particular places. This means staying with uncomfortable stories, with grief for lost species, with not yet having the skills or knowledge or practices to face unpredictable extremes of climate change, or embedded global trade systems, but trying, nonetheless. By tending the earth, by caring for precious soils and species and systems, the past can be seen in a new light.

Critical histories of ecological restoration illuminate the strengths and opportunities for growth in the field and position it as an evolving and potent practice. Critical histories for ecological restoration help to ensure that practices adequately address local ecological, cultural and moral legacies as they endure in material and social worlds.
Afterword

On the 23rd March 2019, just months before finishing this project, a two-term incumbent Liberal/National Coalition Government led by Premier Galdys Berejiklian was re-elected in the State of NSW. This is the same party that repealed laws protecting native vegetation in 2017 and promised in the lead up to the election to ‘drought-proof’ the State. The rights of private property owners to treat the land however they choose and to assume a right to water in an arid land has been reaffirmed. To the current water crisis, the government responded with a call for more dams and greater infrastructure to transport water. State environmental and mining legislation in New South Wales continues to be wildly insufficient to slow, let alone halt, ecological destruction or to hold those guilty of illegal actions accountable. Two months later, on Saturday 18th May, a Liberal/National party Coalition Federal Government led by Prime Minister Scott Morrison, the man who jovially waved a lump of coal in our parliament, was also re-elected. He immediately appointed an overt climate-change denier as Minister for Energy and Emissions Reduction. It was considered for them an unwinnable election, their success attributed to considerable financial assistance from the coal lobby, and, over the issue of a proposed Adani coal mine in Queensland that divided the nation down an old canyon between urban environmentalists and regional industry-workers.

Also in May 2019, a UN summary report presented a dire scenario for the Earth. That one million species are at risk of extinction, and that, for the first time in history, CO2 levels at the Mauna Loa observatory surpassed 414 parts per million. One author of the report, Professor Andy Purvis from the Natural History Museum in London described it as: ‘the most thorough, most detailed and most extensive planetary health check’, whose ‘take-home message is that we should have gone to the doctor sooner.’ Ecologists may squabble over the unclear meaning of ‘health’ in ecological and social systems, but the reality is that the integrity of

992 Native Vegetation Act; Native Vegetation Regulation; Davies, “NSW State Election 2019: Coalition Wins Majority Government.”
994 Horn, “Politics Election 2019: Why Queensland Turned Its Back on Labor and Helped Scott Morrison to Victory.”
ecological processes is not an elitist issue; it is about survival. The neoliberal market and corrupt political systems are failing to protect the environment or provide the social needs of human societies. Moreover, they are failing to adequately respond to global climate change and a species extinction crisis.

These events are connected. They paint a picture of a nation afraid to face environmental realities and address insidious vested interested and power-structures that work against the majority of the people and places that enable them, and of a global community governed by greed. They confirm the need for cultural practices that connect people with the material world–its agency, its beauty and its limits; they reaffirm the need for political mobilisation, radical transformational change and wide-scale ecosystem recovery, and they reiterate the need to guard the ethics of environmental management and scientific practices wisely.

We need, more than ever, opportunities to reimagine the national self–a self that is tangled up with the wellbeing of all species and all cultures, a self that is the aggregation, but not homogenisation, of complex local experiences. Restoration cultures are arguably as much about healing local and national discourses and relationships as they are about physical recovery. Restorative practices form part of the ongoing remaking of human relationships with place, as imperfect and politically complex as they are.

The way that ecological restoration tells stories about itself and operates carries real-world moral and ethical implications. Restoration discourse and practice have the capacity to reinforce damaging settler-colonial imaginaries, territorial claims and power relations. They also have the capacity to carry out recuperative eco-political work that reconstitutes histories of place and builds flourishing communities. This thesis proposes that the way to move towards a dominance of the latter is through attentive place-based practices, informed by rich local histories, critical reflection and inclusive participatory action.

Ecological restoration is a relationship, a conversation, a collaboration with an ever-unfolding world. Like all good relationships, it requires patience, commitment, reflection, deep-listening and creative reinvention as circumstances change.
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I set out in my research to explore cultures and stories of ecological restoration, and the role history has to play at times of increasing change. I explore how the practices and the characters actively craft place, and how the places themselves craft restoration practice and culture, with its associated moral, and political dimensions.

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I do this in Australia

A place where lines and space and movement and race all combine to create and deny.

A dynamic and diverse land with layered narratives and practical, back-breaking experience that offers striking parables for a world facing transformative environmental change.

I look here, amidst these hard-working folk and landscapes that evoke the past but one troubled, unknown yet revered as much as they are feared in the present and loved in spite of their ephemerality.

I listen to the complex shifting role of history in ecological restoration and point to the dangers of further repression, denial and aggression to other peoples and cultures and ontologies and ways of life.

And so, here I go—with three stories from three places on the edge of thin spots in the south east of lots, of land.

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Dust

I thought it was going to be a romantic holiday.
Of course, the things that are important to me that Greg Dening allows us to speak got in the way, and I found myself, with my husband to be, on a tour of the circle of green.

It was planted by Albert Morris and his wife Margaret [who is too often absent from the story] in partnership with the Zinc corp helping both the mines and the local folks from the encroaching, omnipresent dust.

The colonial practices of over-grazing and digging this earth for what it’s worth had literally stopped them for being able to see, and breath, and live without the trees they burned.

The regen reserves were a great band aid, providing time and public space with their goat tracks and dog shit and relics of teenage romps amongst the Mulga.

I’m not actually allowed into the reserves, like all of the townsfolk who walk them so often. Which makes it difficult with university travel forms and ethics approvals and academic norms, but we won’t say.

Danger, risk and stories forgotten.

Piles of dust making great bike jumps eroding away for the past to come out and say

BHPb - Lead.

Restoring the land here, is about health. Managing for the poisons that descend on South Broken Hill where the poorest live in the will of the mining companies as toxic skimp dumps mobilize with the erection of changing climate. The highs and lows and dries and rains, again blowing what remains.

Is this science? Or history? Or Art? When a rust clad truck holds back the muck?

Should olives be planted, that leave the heavy metals out of their oils?

Should a sign be erected saying DO NOT PASS GO as Perilya now collects their two hundred dollars too regularly to continue without inheriting responsibility from those who came before BHP more, but now further away, where time will catch up some other day.

So, what it is, here, to restore? What do the land and the kids, and the starving sheep need? While the earth still bleeds from the seams that give and give and give. We have never been
modern, as Latour exclaims, so don’t essentialise progress or denigrate the past we conjure up so flippantly, a time standing still with boomerangs at will.

And the Menindee Lakes run dry and the Darling doesn’t flow so that the cotton can keep on growing here, and the mining can boom even though it’s a bust year.

What does restoration mean in this little border of green on the boundary with the red desert, sun setting, Pro Hart and other brilliant local art capturing the spectacular place where Mad Max raced in those derelict cars.

What does restoration mean when to remove the exotics makes way for the erotic flow of lead below? And who is to know what is right when there is no pathway to the past and the future is changing ahead all too soon fuelled by the boom?

But there is hope—I find it in small grassroots gangs of folk who build partnerships and youth training programs and Aboriginal cultural exchanges and see this place as part of it all. Where art and science and food and culture history meet and challenge the stories that will otherwise beat them.

So, I’m a geographer and ecologist doing work in environmental history through an art residency—which makes perfect sense to me.

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Soil

The sun shines lightly on flecks of yellow billy buttons fenced off from the sheep.

It’s a trial to see what happens when hard hooves and earth don’t meet for a while.

It’s a grazing landscape, an intergenerational farm that still tells stories of rolling hills of colour after rain. But what if these memories were no longer remain?

What if restoring here is about ignoring and denying the local knowledge of settler folk who love this place and though they graze their sheep they know so much else than science and want to keep the local things all in their place.

Part for beauty,
Part for history,

Part for production, which is increasingly relying on the native species that they believe can handle new extremes.

So the past here is about a recognition, a conversation and admission of what has been done and what’s still done over there and an ethics of care and concern for how to continue in this land when prices are set by a great upper hand.

With so many years of running the race of a grazier comes a great sense of place.

I wonder through paddocks and look for the tiny-brights and the inconspicuous grasses that carried the herds through the travelling passes, east to west, west to east, like the Bundian Way; where murnong was farmed in a ‘cultural way’.

So, to restore these systems acutely, authentically, is to restore a past denied, a history that we soften hide. Where stories matter to decolonising people and place. Though there is this thin place between in space and time where change keeps ravishing on confusing linear notions of what is and what’s gone. Thickness and trouble and evolution amidst the rubble of pre, post, de-colonial.

Our grasslands have been so terribly overlooked. So misunderstood, misrepresented, mauled and obscured, trodden and blended with species that now are flourishing wildly.

Whoops. They weren’t meant to do SO well. Ecological passports anyone? Or some more poison in drums? Because it’s got to the point where money can’t fix this.

So the graziers that could be written as the damaging violent murderers of a white upper hand are now the same ones who want to survive in the place where they feel the most alive. It’s not an easy life, and how often can taxes prop up their systems through the rare, short, unusual drought times?

But the grasslands here are tough and believe in them we must for there is not much else as a saviour now that God AND Nature and are dead.

Stories, I say–stories to save the day. To trouble and torment the reductive directions and catchment intentions that deny the local particularities of place.
Stories of affliction that go hand in hand with prediction of climate change and grief and love and bereavement to come.

So, plant! But not just trees! Ideas and dreams and alternative memes. Please think of restoring so much more than what can be seen and photographed in milk carton frames with big hat politicians and handshakes with small cherub-faced-children.

Restorative ecologies that honour the local and cycles of time and rhythm and love and forgiveness and opening up to paths hidden from us by power and greed and far distant dreams.

Sand

So what happened here?

What kind of history can we call up to fill the gaping holes?

It’s all there

It’s all there in the songs and the trails and soil and air and tarmac and the care

It’s all there in the imported rainforest paper (because the mill is gone) archives of the boxes that remained from going up in flames because they were not named.

There are wounds amongst the gum trees,

And things they disappear as their friends and foes revere the ever-changing world they live in.

Others settle in, their belonging debated as they just look for a home to call their own girt by sea –

A sea that's slowly billowing in, over dunes to fresh lagoons where frogs and turtles be;

To swallow up the place they love too much for fickle time to stop them.

Lines are redrawn and ecology is complex and while the past is used it is no template for progress.
Why care for this place? A place that is so trodden and broken with beauty forgotten–a home, a hill, a life, a will that makes me see:

Labour, community, personal healing by dealing with the mistakes of colonial past and capitalist ruin.

Returning to something to be proud of –

To tell a story you want your name on.

Narrating a place that is not past but present, luminescent, radiating the troubles that bound its seams

Shining light on all who dream in the face of big business and corporations and the dismal denial of sacred becomings

Through fences and plastics and poisons and signs and so much time and love and effort and stories that are ours and yours and mine

But still there is trauma here

- 

Not knowing how to research or write or accept an interpretation without careful mediation of misrepresentation

Because it’s all too raw.

History before, now, after

Science is much safer, we all shrug.

But people matter and stories matter and if we can stay with the trouble, we might move to restorative ecologies in place I say!

Rednecks they say - making waves, smashing windows, afraid of accepting what was done for fear of what is still to come.

I plod this road with feet from afar, taking time to be with the birds and fireweed, ingesting tiny flies and wondering how this thin space can possibly be so thick.