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Botanical Knowledges, Settling Australia
Sydney Botanic Gardens
1896-1924

By

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A thesis submitted in fulfilment of
the requirements for the degree of
Doctor of Philosophy

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DECLARATION

**This thesis is my own original work
and has not been submitted in whole
or in part for a higher degree at any
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ABSTRACT

Between 1896 and 1924, the collections of the herbarium, library, museum and gardens at the Sydney Botanic Gardens became a substantial archive of botanical knowledges. This thesis examines the production and movement of these botanical knowledges within transnational networks associated with the Sydney Botanic Gardens. Each of the collections gathered specimens of plants, plant material and plant information. Some of these botanical knowledges came from Australian landscapes and Australian people, but others came from countries, institutions and individuals located all over the world. In addition to gathering this material, the Sydney Botanic Gardens also sent botanical knowledges out into the transnational network of botanical knowledges. This mobilisation enabled the institution to support the intensification of colonial settlement. By examining the scientific practices produced from plants, plant material and plant information I clarify the connection between transnational botanical knowledges and emergent environments of settlement. The collections accumulated during the directorship of Joseph Maiden provide the primary sources for this thesis and include herbarium specimens and illustrations, books, reports, bulletins, scientific publications and remnant plantings in gardens. The first part of the thesis examines the production of botanical knowledges; in particular collecting, naming, and corresponding. Three case studies follow in the second part of the thesis revealing the various roles of the Sydney Botanic Gardens in applying these knowledges to national and international questions. The histories of Prickly pear, *Opuntia sp.*, wattle, *Acacia sp.* and street trees demonstrate the capacity of the Sydney Botanic Gardens to assist in a variety of settlement issues. This was achieved through harnessing the idea of usefulness to all aspects of Sydney Botanic Gardens work.

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ABBREVIATIONS

AJCP	Australian Joint Copying Project
CRHS	Clarence River Historical Society
ML	Mitchell Library
QSA	Queensland State Archives
RBGS	Royal Botanic Gardens Sydney
SR NSW	State Records of New South Wales

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The seeds for this work were found in a report for the Environmental Protection Agency in Queensland in 1999, The Queensland Botanic Gardens Context Study. In reviewing the fifteen nineteenth century botanic gardens sites for possible listing on the State Heritage Register, it was apparent to me that these places were not only connected to one another but also connected into a network of botanic gardens all over the world. Exposure to Manuel Castells' theories of Network Society during postgraduate coursework at University of Technology Sydney prompted a reconsideration of the workings of botanic gardens. Castells and many other theorists of globalisation argue that technological revolution of the mid twentieth century marked the beginnings of networked societies. This immediately piqued my interest as I could see that the botanic gardens that I had researched in Queensland already had sophisticated networks into which moved plants, plant material and plant information. Sydney Botanic Gardens also belonged to this network.

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The story of the garden, when it is told by the gardener, is a homage to the gardener's curiosity and explanation of a transgression by a transgressor ¹

The usefulness of a thing makes it a use-value ²

¹ Jamaica Kincaid, *Among Flowers: A Walk in the Himalaya* (Washington: National Geographic Society, 2005), 116.

² Karl Marx, *Capital : A Critique of Political Economy*, trans. Ben Fowkes, 3 vols., vol. 1 (London: Penguin, 1976), 126.

Introduction

Nestled on the banks of Port Jackson adjacent to the central business district, the Sydney Botanic Gardens was officially established in 1816. The gardens teem with life. Lunch time visitors include joggers, walkers, personal trainers and groups of heaving athletes enjoying the vast open area and trails through the grounds. The bat colony nests in the cool centre of the gardens, some chatter, some sleep. Birds, insects, butterflies and lizards join them as part of the unseen biodiversity of this inner city parkland. Groups of children on school excursion are lead through the gardens with enthusiastic education officers and teachers. They sometimes explore the cluster of bamboos, or stroll through the walled succulent garden, marvel at the hundred year old Moreton Bay fig *Ficus macrophylla* affectionately known as 'the children's tree'. Tourists and locals alike will wonder at the beauty of the gardens. Perhaps they will take the opportunity to experience the *Cadi Jam Ora* – a garden that tells the story of flora known to the Cadigal people, traditional owners of the land, who knew this site as *woggan-ma-gule*. Immediately beside this is a garden that grows examples of the crops of the First Fleet, provoking visitors to think about the early intertwined history of two cultures that lay claim to this place.

The Sydney Botanic Gardens are part of the first site of dispossession of indigenous people in Australia.¹ This land was the first brought under cultivation in the Governor Philip's colony on their arrival in 1788 with nine acres of wheat and corn. From this first site at Farm Cove, dispossession eventually spread across the continent. This early tilling of the soil, the nurturing of crops, vegetables and fruit plants are implicated in European vision of Australian land as one of infinite possibilities. This site was first called the botanic gardens in 1816. The Sydney Botanic Gardens is one of the oldest non-European botanic gardens in the world. Botanic gardens although present in Europe from the seventeenth century, emerged in colonial settings over the nineteenth century. They have always been centres where plants, plant material and plant information transited and connected to a network of similar places concerned with colonisation and use of botanical bounty.

During the first Curator Charles Fraser's tenure from 1817-31, the Sydney Botanic Gardens cultivated seeds and plants to grow as food for an establishing population. Food seeds travelled through Sydney to places like Norfolk Island, where Colonel Morrisset's wife Emily pleaded for vegetable and fruit trees for culinary relief from the lemons and figs already growing in her garden.² Over the nineteenth century it was sometimes a house for zoological displays; sometimes host for important community events; also a home to people who worked in the gardens from the Director to the stable hands, as well as being home for animals both domesticated and wild. Propagating houses also made up part of the institutional work providing trees, shrubs and flowers for streets, schools, post offices, rail

¹ Botanic Gardens Trust Sydney, "Sydney's Botanic Bicentenary," ed. Department of Environment and Climate Change New South Wales (Botanic Gardens Trust Sydney, 2008), 27-28.

² Letter from Emily Morrisset, Government House, Norfolk Island to Charles Fraser, 5 March 1830, Botanic Gardens Sydney, Seed and Plant Registers, in RBGS Library Special Collections (Sydney: 1828-1898), Series A1.

stations and a range of other civic spaces. Complementary and integral to many of these activities was the Sydney Botanic Gardens' role as an institution of colonial science.

This thesis examines the Sydney Botanic Gardens in the period 1896 to 1924, under the directorship of Joseph Maiden. During this period the botanical collections were developed along the same lines as other globally located botanic institutions. Each of these places was connected through the mobility of plants, plant material and plant information. The aim of this movement was to enhance the information available for the particular settlement problems and challenges of New South Wales and consequently Australia. As such, a study of the Sydney Botanic Gardens at this time opens up avenues for considering the transnational processes at work in the colonisation of these political regions. At the heart of this work were the scientific practices that produced botanical knowledge. The herbarium, specialist library, museum and specialised scientists made it an archive for botanical knowledges



Maori scholar Linda Tuhiwai Smith argues that botanic gardens belong to a family of colonising institutions along with museums, universities and other sites of research that appropriated indigenous knowledge for their own ends. She points out that material gathered, classified and systematised in this way stabilised and preserved European knowledge networks such that they can be accessed in an ongoing way.³ The role of botanic gardens was differentiated from these other types of museums because the mandate was not simply to

³ For a discussion of the continuity of dispossession through past practices and legislation in relation to water see, Tony McAvoy, "Water -- Fluid Perceptions," *Transforming Cultures eJournal* 1, no. 2 (2006).

remove plants, plant material and plant information from the colonies. Such movement activated work that 're-arranged, re-present(ed) and re-distributed'⁴ these botanical knowledges in relation to new discourses. These discourses variously included: pure science, fora of nationalism, cultural and material appropriation, urban and town planning and applied research. The Sydney Botanic Gardens activity in these discourses contributed to the scientific authority and authenticity of the institution and the key scientists employed there.⁵

This variety of sites of intervention was an indicator of the flexibility of the Sydney Botanic Gardens made available through access to botanical knowledges. The base line for this set of functions was the maintenance of a collection of plants, plant material and plant information to create a specialist botanical archive. The main orientation of the Sydney Botanic Gardens from 1896 to 1924 was collecting plants, plant material and plant information with the view to circulating botanical knowledges at local, national, transnational and imperial scales. Sometimes this was a matter of moving plants out of Australia, and other times it was a matter of moving plants into Australia. The ultimate effect of this circulation was to change various environments.

Environmental histories in Australia have commonly focused on place as the methodological spine of narratives and story-telling. Often this entails marking out the parameters of research by considering an identifiable geographic area. Such studies include Tom Griffiths *Slicing the Silence* on Antarctica,⁶ Eric Rolls *A Million Wild Acres* located in the Pillaga Forests of

⁴ Linda Tuhiwai Smith, *Decolonizing Methodologies: Research and Indigenous Peoples* (Sydney: Zed Books, 1999), 62.

⁵ This is not an exclusive list.

⁶ Tom Griffiths, *Slicing the Silence: Voyaging to Antarctica* (Sydney: University of New South Wales Press, 2007).

Northern New South Wales,⁷ George Main's *Heartland* concerning the Cootamundra district of the same state⁸ and Libby Robin's *How a Continent Created a Nation* regarding a larger geographic entity, Australia.⁹ However as Griffiths points out such histories, while geographically centred, move across boundaries and have the capacity to 'uniquely bridge planetary and deeply local perspectives, staking a claim for histories that are bound intimately to place and also embrace the natural world.'¹⁰ While retaining this philosophy, this thesis departs from this method by considering emergent environments and how they are formed through movement of botanical knowledges – necessitating a release from a specific geographic region or identifiable place.

As an environmental history, this thesis uses a definition of environment as imaginative, real, natural, man-made, urban, rural, in the laboratory and in the field: in short, environments are hybrid nature cultures. William Cronon argues that 'environmental historians ...blend the analytical traditions of history with those of ecology, economics, anthropology and other fields.' For him and for this thesis this means concentrating on the 'fundamental premise... that human acts occur within a network of relationships, processes and systems that are ecological as they are cultural' therefore adding 'a theoretical vocabulary in which plants, animals, soil, climates and other nonhuman actors become the co-actors and co-determinants' of this history.¹¹ The Sydney Botanic Gardens was a node in a transnational network that connected plants, plant material and plant information to people within environments of

⁷ Eric Rolls, *A Million Wild Acres* (Camberwell, Victoria: Penguin Books, 1981).

⁸ George Main, *Heartland: The Regeneration of Rural Place* (Sydney: UNSW Press, 2005).

⁹ Libby Robin, *How a Continent Created a Nation* (Sydney: University of New South Wales Press, 2007).

¹⁰ Tom Griffiths, *Forests of Ash: An Environmental History* (Cambridge ; New York: Cambridge University Press, 2001), 194.

¹¹ William Cronon, "A Place for Stories: Nature, History, and Narrative," *The Journal of American History* 78, no. 4 (1992): 1349.

settlement. This was not simply the physical land beyond the city of Sydney, but instead bound together all of these people, scientific activity and places to evoke change.

It is the rearrangement, re-presentation and redistribution of these botanical knowledges from the Sydney Botanic Gardens in support of settlement that is the subject of this thesis. New South Wales, although the oldest of the Australian colonies, was by no means a fully established settlement, neither economically nor culturally, by the 1890s. Generations of migrants had begun the process of creating land tenure and land management practices in both rural and urban settings. In many ways this was experimental and both governments and individuals had experienced both spectacular successes and dismal failures. Governments of the Australian colonies saw one of their roles in stabilising settlement as the provision and dissemination of information that would assist in this process. Through access to transnational resources that the collection enabled, the Sydney Botanic Gardens worked their own goals into those of the broader government of New South Wales. This meant adapting plants, plant material and plant information that often came from other colonial locations to the needs and desires of local communities. As Federation caused the shift from colony to statehood during this period, the imperative for assisting settlement increasingly came to mean a contribution to Australian nation building. The aim of this thesis is to unpack the practices of the Sydney Botanic Gardens that produced these transnational botanical knowledges. Further it will demonstrate how those mobilised botanical knowledges operated in the support of settlement.

As an independent agency within government, the Sydney Botanic Gardens were precariously placed, needing constantly to reiterate the goals of government in order to

survive as a fully functional scientific and recreational place. The growth of these gardens during this period was as an anomaly in comparison to the changing directions of other Australian botanic gardens. The botanic gardens of Melbourne, Brisbane, Adelaide, Rockhampton and Sydney had all developed within their respective colonies as government collectors and acclimatisers over the nineteenth century.¹² While Australian botanic gardens played a role in the social life of these cities, some of these gardens had roles as key centres for acclimatisation and botany in Australia. These roles were generally balanced with the management and development of park facilities for the local community. By the end of the century, however, each of these places began to lose their scientific functions to become increasingly recreation-focused.

By the 1890s the Melbourne Botanic Gardens had been split in two after a bitter public debate about the stewardship of the then Director Ferdinand von Mueller and how to best serve the colony of Victoria. In 1873 the Melbourne Botanic Gardens and National Herbarium became separately administered providing two distinct functions: one was a

¹² Eve Almond, "A Garden of Views: Photographic Records of the Royal Botanic Gardens, Melbourne," *Victorian Historical Journal* 67, no. 1 (1996), Watson Bates, "Perceptions of Melbourne's Pride and Glory," *Victorian Historical Journal* 67, no. 1 (1996), Helen M. Cohn and Sara Maraoske, "Relief from Duties of Minor Importance - the Removal of Baron Von Mueller from the Directorship of the Melbourne Botanic Gardens," *Victorian Historical Journal* 67, no. 1 (1996), Helen M. Cohn and Sara Maraoske, "Royal Botanic Gardens, Melbourne: A Select Annotated Bibliography," *Victorian Historical Journal* 67, no. 1 (1996), Francine Gilfedder, "The Provincial Botanic Gardens in Victoria and Their Relationship with the Royal Botanic Gardens, Melbourne," *Victorian Historical Journal* 67, no. 1 (1996), Linden Gillbank, "A Tale of Two Animals: Alpaca and Camel: Zoological Shaping of Mueller's Botanic Gardens," *Victorian Historical Journal* 67, no. 1 (1996), Peter Harrison, "The Cranbourne Botanic Garden and the Maud Gibson Gardens Trust," *Victorian Historical Journal* 67, no. 1 (1996), Rohan Lamb, "Under Pressure: The Evolution of the Water Supply of the Royal Botanic Gardens, Melbourne," *Victorian Historical Journal* 67, no. 1 (1996), Darren Watson, "William Guilfoyle and Staff Discipline in the Botanic Gardens," *Victorian Historical Journal* 67, no. 1 (1996), Thersa Wyborn, "In Pursuit of Useful Knowledge: The Nineteenth Century Concept of the Botanic Garden," *Victorian Historical Journal* 67, no. 1 (1996), J.C.R. Sim, Brisbane City Botanic Gardens Conservation Study, unpublished report, Brisbane: Brisbane City Council, 1995, R.T.M. Prescott, *The Royal Botanic Gardens, Melbourne: A History from 1845-1970* (Melbourne: Oxford University Press, 1981), Carol Henty, *For the People Pleasure: Australia's Botanic Gardens* (Melbourne: Greenhouse Publications, 1988), Jodi Frawley, Rockhampton Botanic Gardens History, unpublished report, Rockhampton: Rockhampton City Council, 1999, Pauline Payne, Dr Richard Schomburgk and Adelaide Botanic Garden, PhD thesis (University of Adelaide, 1992).

recreational park and the other a scientific institution.¹³ The Brisbane Botanic Gardens lost scientific functions to the new Department of Agriculture¹⁴ and in Adelaide scientific work was in decline.¹⁵ Rockhampton Botanic Gardens lacked both the financial means and the professional personnel to continue duties with regard to scientific activity, instead supplementing garden income with regular plant and nursery sales.¹⁶ This did not mean that colonies stopped acclimatising, or stopped botanical research, but as ideas shifted and changed botanic gardens were less likely to engage in this field. In the first year book produced by the new Commonwealth Office of Census and Statistics in 1907, statistician George Knibbs detailed the development of agricultural colleges and experimental farms, which had taken on some of the traditional research, development and support functions that were once undertaken in the various botanic gardens.¹⁷

These botanic gardens ceased to be the important scientific institutions they had been and instead became something else, usually a prestigious park in each of these capital cities or regional towns.¹⁸ They fulfilled a role that adjusted their functions to align with the growing

¹³ Cohn and Maraoske, "Relief from Duties of Minor Importance - the Removal of Baron Von Mueller from the Directorship of the Melbourne Botanic Gardens." Prescott, *The Royal Botanic Gardens, Melbourne: A History from 1845-1970*, 79-90.

¹⁴ Jodi Frawley, *The Queensland Botanic Gardens Context Study*, unpublished report, Brisbane: Environmental Protection Agency, 1999.

¹⁵ Richard Aitken, *Seeds of Change: An Illustrated History of Adelaide Botanic Garden* (Adelaide: Botanic Gardens of Adelaide in association with Blooming Books, 2006), 113, Henty, *For the People Pleasure: Australia's Botanic Gardens*. Aitken argues that some experimentation and botanical work continued across the directorships of Maurice Holtze 1891-1917 and J F Bailey 1917-1932. Holtze was interested in fruit production and Bailey's particularly strong scientific credentials.

¹⁶ K C Baker, "The Botanic Gardens Rockhampton Queensland," *Australian Parks* August (1967), K C Baker, "The Garden Story an Historical Review of a Century of Development at the Rockhampton Botanic Gardens," (Rockhampton: Rockhampton City Council, 1969), Frawley, *Rockhampton Botanic Gardens History*.

¹⁷ George Knibbs in Commonwealth Bureau of Census and Statistics, *Official Year Book of the Commonwealth of Australia Containing Authorative Statistics 1901 to 1907 and Corrected Statistics for the Period 1788 to 1900* (Melbourne: McCarron, Bird & Co, 1908), 426-35.

¹⁸ Georgina Whitehead, *Civilising the City: A History of Melbourne's Public Gardens* (Melbourne: State Library of Victoria, 1997), Robert Freestone, *Model Communities: The Garden City Movement in Australia* (Melbourne: Nelson, 1989).

pressure in town planning to include parks for the health and aesthetics of urban areas.¹⁹ Sydney, along with other botanic gardens, also fulfilled this function: bands played, picnickers feasted and promenaders strolled.²⁰ The lower garden in particular was a favourite recreational spot for visitors and Sydney-siders. The meandering paths that laced through the established trees and flower beds made it the perfect resort for fresh air and healthy activity. Patrons were expected to conduct themselves in a respectful manner, mirroring middle-class notions of appropriate public behaviour.²¹ Bordering Farm Cove with a gentle gradient up to the middle garden, this was a green refuge, to be enjoyed by all throughout the year.

In an era when the scientific orientations of most Australian botanic gardens were in decline, those of the Sydney Botanic Gardens grew exponentially and therefore were distinctive. Rather than have the scientific functions of the institution carved away and absorbed by other houses of science and research, the Sydney Botanic Gardens travelled in the opposite direction. They went from having only a small library and herbarium to competing on a national scale with the National Herbarium in Melbourne and functioning as a part of the global network of botanic research institutions. Table one indicates that the staffing of the institution increased from ten in 1896 to a peak in 1915 of fifty-two.²² By the time that Maiden left the institution, there were an equal number of indoor and outdoor staff. At various times during his tenure, for example during the First World War, other pressures

¹⁹ Jan Hoskins, *Cultivating the Citizen: Cultural Politics in the Parks and Gardens of Sydney, 1880-1930* PhD thesis, Department of History, University of Sydney (1996), Robert Freestone, "Imagineering the City Beautiful: Parks, Gardens, and Town Planning Thought," in *Planting the Nation*, ed. Georgina Whitehead (Melbourne: Australian Garden History Society, 2001).

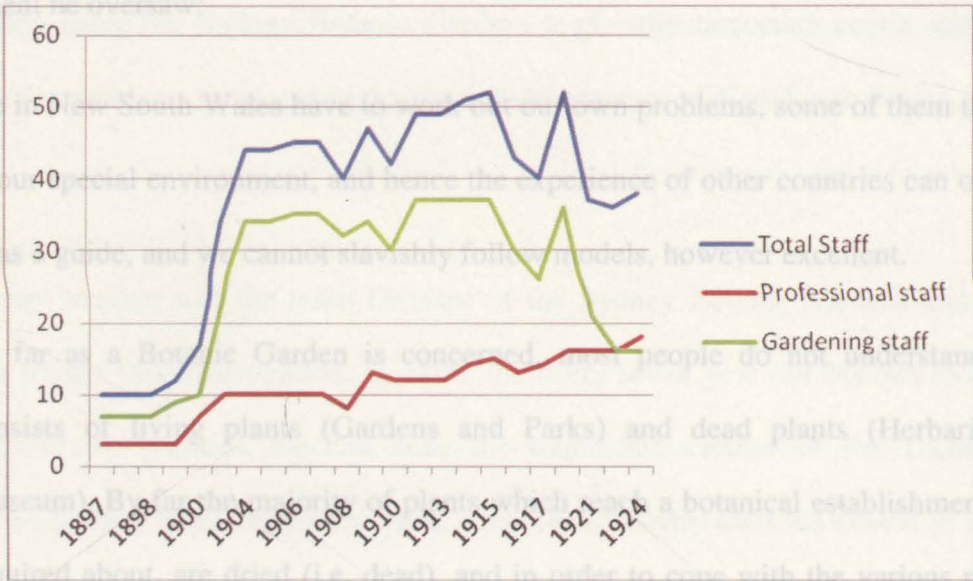
²⁰ Lionel Gilbert, *The Royal Botanic Gardens, Sydney: A History 1816-1985* (Melbourne: Oxford University Press, 1986), Lionel Gilbert, "From Joseph Banks to Joseph Maiden: Towards a Scientific Botanic Garden," *Historical Records of Australian Science* 11, no. 3 (1997).

²¹ For the American analysis of this use of parks see Galen Cranz, "The Pleasure Ground: 1850-1900," in *The Politics of Park Design: A History of Urban Parks in America* (Cambridge: The MIT Press, 1982).

²² This chart includes the staffing at the Botanic Gardens only. Statistics were also gathered for the parks, nursery, and private gardens, adding large numbers to the overall employment statistics of the Botanic Gardens complex, but have not been included here.

suggest that staffing levels might have fallen or stagnated. Interestingly, in opposition to other employment trends, the Sydney Botanic Gardens managed to grow a healthy and stable workforce.

Table 1. Sydney Botanic Gardens Staff Growth 1896-1924²³



Critical to this growth was the increased employ of professional staff along with support staff. Two botanical assistants were joined by a junior clerk, collector, store keeper and label writer as well as a junior attendant and a herbarium boy. Later in 1915, an agrostologist joined the staff as a specialist in the study of grasses and eventually a librarian was employed. In the process the Sydney Botanic Gardens became a substantial archive of Australian botany. Additionally, the non-Australian plants, plant information and plant material in the collection multiplied. The herbarium, the library, the museum and the gardens all grew during this period. So much so that in 1899 new buildings were needed to re-house the growing

²³ I was unable to gather data for 1902, 1911, 1918 or 1920. These records were unavailable at the Mitchell Library. Public Service Board, "Schedule," in *Supplement to the New South Wales Gazette* (Sydney: 1896), Public Service Board, "Public Service List," *New South Wales Public Service List* (1898, 1899, 1900, 1903, 1904, 1905, 1906, 1907, 1908, 1909, 1910, 1912, 1914, 1915, 1916, 1917, 1921, 1923, 1914, 1925).

collections. The enlargement of the built environment of the Sydney Botanic Gardens enabled a continued growth in botanical work.

Joseph Maiden, the Director of the Sydney Botanic Gardens, had this to say about the establishment he oversaw:

We in New South Wales have to work out our own problems, some of them the result of our special environment, and hence the experience of other countries can only help us as a guide, and we cannot slavishly follow models, however excellent.

So far as a Botanic Garden is concerned, most people do not understand that it consists of living plants (Gardens and Parks) and dead plants (Herbarium and Museum). By far the majority of plants which reach a botanical establishment, or are inquired about, are dried (i.e. dead), and in order to cope with the various problems that arise, a large herbarium (a botanical museum being mostly a supplement to the herbarium arranged in a special manner for physical reasons) must be maintained. The herbarium and the garden are indissolubly united, the one being unworkable without the other, and it is never questioned in the principal botanical establishments of the world, e.g. Kew, Paris, Berlin and New York.

So that a definite idea of a Botanic Garden is contained in the full sense of the word, and not in the maimed or restricted sense of those gardens which are more parks or horticultural establishments. Sydney is a capital city and her Botanic Garden is truly a botanical establishment: it is also one of the oldest in the world.²⁴

²⁴ Manuscript of the History of the Sydney Botanic Gardens, Maiden's Centennial Manuscripts, RBGS Library Special Collections, 20.

The Sydney Botanic Gardens collection was made up of a library, herbarium, museum and living collection in the gardens. Each department had a role to play in the creation and upkeep of the transnational exchange of botanical knowledge. Material was purchased, borrowed and exchanged from institutions in other colonies and nations to the extent that the collections at the Sydney site became competitive on a global scale. The quality and size of the collection made the Sydney Botanic Gardens a globally important centre such that it could solve the problems presented in the specialised environs of New South Wales.

Joseph Henry Maiden was the tenth Director of the Sydney Botanic Gardens and it is his tenure that frames this investigation. In 1896, the thirty-seven year old Maiden took up the directorship of the gardens. He had been the foundation curator of the Technological Museum²⁵ in Sydney where he had worked since 1882, shortly after his arrival in Australia from London. During his fourteen years at that post, he had developed the research and educational roles of the Technological Museum, specialising in the development of technological products, innovations and inventions. He established the Technological Museum's research direction into technology and economic botany. Where today we may overlook the place of botanical knowledges within the frame of a technological museum, in the late nineteenth century it was all important. Maiden built a cache of intellectual resources, scientific practices, methodological approaches and a reputation as a botanist which he brought to the directorship of the Sydney Botanic Gardens.²⁶

²⁵ This museum operated under a number of names: Industrial, Technological and Sanitary Museum; Technological Museum; Museum of Technology and Applied Science; and Powerhouse Museum. To avoid confusion I have used the name Technological Museum throughout the thesis to refer to this institution.

²⁶ Lionel Gilbert, *The Little Giant: The Life and Work of Joseph Henry Maiden 1859-1925* (Sydney: Kardoorair Press in Association with Royal Botanic Gardens, Sydney, 2001).

Maiden was disappointed to miss out on an appointment as botanist in the reshaped forestry branch of the New South Wales Department of Agriculture in 1890. However, he was rewarded three years later with the role of consulting botanist to the Department of Agriculture, then in 1896 the directorship of the Gardens. The Sydney Botanic Gardens directorship was a formidable opportunity for Maiden – he was able to shape the work, research and public profile in much the same way as he had in the Technological Museum.²⁷ The Sydney Botanic Gardens was, without doubt, a far more prestigious posting for Maiden. No longer constrained by local forces he may have felt at the museum, the collections at the Sydney Botanic Gardens opened Maiden's connections to the world.

When Maiden made the move to the directorship, he also moved into one of the homes on the Farm Cove site with his family. His wife, Jeannie, four daughters, Gertrude, Mary, Acacia Dorothy, Nellie and son Harrie entered into residence in the gardens. This was to become their home for the next twenty-eight years. At this time, many staff lived on the grounds, stable hands, gardeners and botanists. In this way the appointment to the directorship created a different life for Maiden, where his professional sphere was also the place where his children played when they were young and celebrated their weddings when they were older. On leaving the post of Director in 1924 Maiden moved to Turramurra, on Sydney's leafy upper north shore where he died a short time later.²⁸

²⁷ Gilbert, *The Royal Botanic Gardens, Sydney: A History 1816-1985*, Gilbert, "From Joseph Banks to Joseph Maiden: Towards a Scientific Botanic Garden."

²⁸ A H S Lucas, "Joseph Henry Maiden 1859-1925 (Memorial Series No.3)," *The Proceedings of the Linnean Society of New South Wales* 55 (1930), Mark Lyons and C. J. Pettigrew, "Maiden, Joseph Henry (1859 - 1925)" in *Australian Dictionary of Biography* (Melbourne: Melbourne University Press, 1986).

The time frame of this thesis is 1896 to 1924, the years of Maiden's directorship. These years encompasses a broad range of environmental and economic events in Australia. Following the boom years of the 1880s, the 1890s depression saw a down-swing in the economy that resulted in the collapse of financial institutions, widespread unemployment and the evaporation of investment in Australian manufacturing.²⁹ Federation and drought were to follow in the first years of the twentieth century, with the First World War providing the backdrop for economic activity in the 1910s to 1920s. As this era of the Sydney Botanic Gardens came to a close in the 1920s, the Australian economy was rebuilding. One consistent aspect for these three decades was the drive, from governments new and old, for closer settlement. Closer settlement was the move to occupy and cultivate indigenous lands in European ways that systematically increased population.

Land tenure in New South Wales was not a static beast. Where pastoralism had dominated the tenure system through the earlier years of settlement, shifts in the global market for wool had ramifications within Australia. In addition, immigration to Australia had blossomed through the mid-nineteenth century gold boom. As gold mining dropped off in terms of its capacity to support the new expanded and expanding population, rural tenure began to shift from broad scale pastoralism to smaller, more regulated blocks.³⁰ This heralded new systems of occupation, spearheaded in New South Wales by agricultural development and the rise of the dairying industry. Heather Goodall points out that for indigenous people their own claims for 'free selection emphasised that now they were in direct competition with white

²⁹ F G Clarke, *Australia: A Concise Political and Social History* (Sydney: Harcourt Brace Jovanovich, 1992), 158-93.

³⁰ Richard Waterhouse, "The Yeoman Ideal and Australian Experience, 1860-1960," in *Exploring the British World: Identity, Cultural Production, Institutions*, ed. Kate Darian-Smith, et al. (Melbourne: RMIT Publishing, 2004), Richard Waterhouse, *The Vision Splendid: A Social and Cultural History of Rural Australia* (Fremantle, W.A.: Curtin University Books, 2005).

selectors.’³¹ Dual occupancy had prevailed through the pastoral era, but the influx of immigrants that arrived with these new systems of farming solidified exclusive, rather than shared environments.

The Sydney Botanic Gardens provided authoritative information for those people interested in making the most of government calls for closer settlement. For dairying, important research into fodder grasses, both exotic and indigenous was undertaken in an effort to provide accurate advice for people on the land.³² The Sydney Botanic Gardens also gathered information about plants species thought to be weeds and published lists and advice on the best means of dealing with these plants in the *New South Wales Agricultural Gazette*.³³ This was not a matter of directly intervening into the land management practices associated with closer settlement, but instead of making the best use of transnational resources, combining them with local knowledge and disseminating this information throughout the community.

The development of rural industries saw improved infrastructure – rail and road, but more importantly it also saw the establishment and growth of towns dotted across the state. Therefore these broad changes through closer settlement were not confined to the actual land selected or land selectors. Towns provided a range of hub services for rural industries including banks, stores and hotels. What they also provided were zones of exclusion for indigenous people, who found by the 1890s that they had no rights of access to many of the

³¹ Heather Goodall, *Invasion to Embassy: Land in Aboriginal Politics in New South Wales, 1770-1972* (St. Leonards, N.S.W.: Allen & Unwin in association with Black Books, 1996), 85.

³² Joseph Maiden, "Some Exotic Grasses No.2 - *Paspalum Dilatatum*, Poir," *Agricultural Gazette of New South Wales* 10 (1899): 33, Joseph Maiden, *A Manual of Grasses of New South Wales* (Sydney: William Applegate Gullick, 1898).

³³ Joseph Maiden, "Weeds of New South Wales," *Agricultural Gazette of New South Wales* 26 (1915).

facilities that other Australians enjoyed.³⁴ Closer settlement furthered the dispossession of indigenous people and saw institutions such as the Aboriginal Protection Board with its system of reserves arise at the same time as these land claim policies. Where this process can be partially understood through mapping the layers of closer settlement through surveys, and other sorts of cadastre, this thesis is more concerned with the ways in which this government institution supported this intensification of land settlement. Maiden argued 'every scientific institution should be judged by the amount of intellectual achievement that has been secured under its auspices; what it has done to advance human knowledge and therefore progress.'³⁵ Given that the self-scribed role of the Sydney Botanic Gardens was to serve settlement they were complicit in this new wave of dispossessions of indigenous people and their life.

Upon completion of the new herbarium, library and museum buildings Maiden stated that the object of the herbarium was that it should '(subserve) the grand object of giving information and developing the resources of the Colony.'³⁶ While Maiden was here singing the praises of the herbarium, *all* aspects of the collection were utilised for the encouragement of colonial development. This archive was built on the premise of supporting the settlement of Australia. In this period the Sydney Botanic Gardens intervened and circulated botanical knowledges that, in one way or another, enhanced the claim to land as a right of those belonging to the nation.



³⁴ Goodall, *Invasion to Embassy: Land in Aboriginal Politics in New South Wales, 1770-1972*, 92.

³⁵ Manuscript of the History of the Sydney Botanic Gardens, Maiden's Centennial Manuscripts, RBGS Library Special Collections, 439.

³⁶ Joseph Maiden, "Report on Botanic Gardens and Domains for Year 1899," (Sydney: Botanic Gardens, Sydney, 1900), 4.

This thesis draws from postcolonial theory the distinction between settler-colonialism and other types of colonial occupation. Patrick Wolfe identifies India as a franchise colony where the British never expected to remain, but always customarily returned to Britain.³⁷ Nigeria was another example, which according to Bill Ashcroft et al, the indigenous population was the overwhelming majority but colonisers provided the government and rule.³⁸ Settler colonies are differentiated through the possibility of a claim to prior nationality in (usually) Europe coupled with a desire to nationalise within the territory of migration. Other settler-colonies that operate under this same logic are South Africa, Canada and New Zealand. This process involved a displacement of the indigenous population experienced at the same time as an indigenisation of migrants. Those who benefit took up a position in Australia where the inheritance of the invasion and the ongoing dispossession of indigenous peoples operated as the foundation of belonging in this country. By the 1890s, the Sydney Botanic Gardens was no longer seeking to be an imperial institution, although it definitely drew from this tradition and retained connections with the Royal Botanic Gardens, Kew in particular. It was to be a self styled place, where science was for Australians. At an institutional level it sought to cultivate deep roots into the nation, to nationalise, indigenise and claim on behalf of who had no intention of returning to their nations of birth.

While the ultimate goal or vision for the Sydney Botanic Gardens at this time was to support settlement through the mobilisation of botanical knowledges, this was not simply achieved through the development of a collection of Australian botany. The collection, and therefore the institution gathered, exchanged, purchased, corresponded within a broader system than

³⁷ Patrick Wolfe, "Land, Labor, and Difference: Elementary Structures of Race," *The American Historical Review* 106, no. 3 (2001): 866-68.

³⁸ Bill Ashcroft, Gareth Griffiths, and Helen Tiffin, *The Empire Writes Back: Theory and Practice in Post-Colonial Literatures* (London: Routledge, 1989, 2002), 134-36, Bill Ashcroft, Helen Tiffin, and Gareth Griffiths, *Key Concepts in Post-Colonial Studies*, (London; New York: Routledge, 1998), 211-12.

the location in Sydney might suggest. In other words the institution relied on a transnational movement of botanical knowledges. Used here, “transnationalism”³⁹ broadly refers to ‘multiple ties and interactions linking people or institutions across the borders of nation-states’⁴⁰ while foregrounding the communications that allow this to occur. Ian Tyrrell argues that an essential feature of transnational networks was the reciprocity in the exchange of technologies, ideas and objects across these borders.⁴¹ As Sydney built up its collection, it developed a profile within a transnational botanical information network.⁴² Access to, and

³⁹ I am aware that in the time frame that I am considering, Australia was a nation that was ‘forming’. However, given that nationalism was an important feature of European political systems well before Australia’s Federation, I believe it a reasonable conceptual tool to use in the era before Federation.

⁴⁰ Steven Vertovec, “Transnationalism,” in *Transnational Muslim Politics*, ed. Peter Mandaville (London: Routledge, 2001), Steven Vertovec, “Conceiving and Researching Transnationalism,” *Ethnic and Racial Studies* 22, no. 2 (1999): 447.

⁴¹ Ian Tyrrell, “American Exceptionalism in an Age of International History,” *The American Historical Review* 96, no. 4 (1991), Ian Tyrrell, *True Gardens of the Gods: Californian-Australian Environmental Reform, 1860-1930* (Berkeley, Calif.: University of California Press, 1999), Ian Tyrrell, “The ‘Nature’ of Environmental History: New Views from the Pacific,” *Nature et Progres: interactions, exclusions et mutations, Frontieres*, no. 12 (2006), Ian Tyrrell, “Acclimatisation and Environmental Renovation: Australian Perspectives on George Perkins Marsh,” *Environment and History* 10 (2004), Ian Tyrrell, “Beyond the View from Euro-American: Environment, Settler Societies, and the Internationalization of American History,” in *Rethinking American History*, ed. Thomas Bender (Berkeley: University of California Press, 2002), Ian Tyrrell, “New Comparisons, International Worlds: Transnational and Comparative Perspectives,” *Australian Feminist Studies* 16, no. 36 (2001), Ian Tyrrell, “Peripheral Visions: Californian-Australian Environmental Contacts, C. 1850s-1910,” *Journal of World History* 8, no. 2 (1997).

⁴² On Transnationalism see Marilyn Lake and Ann Curthoys, eds., *Connected Worlds: History in Transnational Perspective* (Canberra: ANU epress, 2005), Peter Jackson, Philip Crang, and Claire Dwyer, eds., *Transnational Spaces* (London: Routledge Taylor & Francis Group, 2004), John Law, *A Sociology of Monsters: Essays on Power, Technology, and Domination*, Sociological Review Monograph; 38. (London; New York: Routledge, 1991), Sally Eden, Sylvia M Tunstall, and Susan M Tapsell, “Translating Nature: River Restoration as Nature-Culture,” *Environment and Planning D: Society and Space* 18 (2000), Roy MacLeod, “On Visiting the ‘Moving Metropolis’: Reflections on the Architecture of Imperial Science,” *Historical Records of Australian Science* 5, no. 3 (1982), Roy M. MacLeod, *Nature and Empire: Science and the Colonial Enterprise*, Osiris. Second Series, Volume 15 (2000) (Chicago, Ill.: University of Chicago Press, 2001), David Wade Chambers and Richard Gillespie, “Locality in the History of Science: Colonial Science, Technoscience, and Indigenous Knowledge,” in *Nature and Empire: Science and the Colonial Enterprise*, ed. Roy MacLeod (Chicago: The University of Chicago Press, 2001), Roy MacLeod, “Introduction,” in *Nature and Empire: Science in the Colonial Enterprise*, ed. Roy MacLeod (Chicago: University of Chicago Press, 2001), Katharyne Mitchell, “Transnational Discourse: Bringing Geography Back In,” *Antipode* 29, no. 2 (1997), Katharyne Mitchell, “Transnationalism in the Margins: Hegemony and the Shadow State,” in *Transnational Spaces*, ed. Peter Jackson, Philip Crang, and Claire Dwyer (London: Routledge Taylor & Francis Group, 2004), S Ravi Rajan, “Towards a Metaphysic of Environmental Violence: The Case of the Bhopal Gas Disaster,” in *Violent Environments*, ed. N. L. Peluso and M. Watts (Ithaca & London: Cornell University Press, 2001), S. Ravi Rajan, *Modernizing Nature: Forestry and Imperial Eco-Development 1800-1950* (Oxford: Clarendon Press, 2006), Sarah Whatmore and Lorraine Thorne, “Elephants on the Move: Spatial Formations of Wildlife Exchange,” *Environment and Planning D: Society and Space* 18 (2000), Sarah Whatmore, *Hybrid Geographies: Natures Cultures Spaces* (London: Sage Publications, 2002), Brenda S A Yeoh et al., “Approaching Transnationalisms,” in *Approaching Transnationalisms: Studies on Transnational Societies, Multicultural Contacts, and Imaginings of Home*, ed. Brenda S A Yeoh, Michael W Charney, and Tong Chee Kiong (Boston: Kluwer Academic Publishers, 2003).

participation in this network contributed to the store of resources that could be rearranged for the benefit of settlement.

During Joseph Maiden's directorship of the Sydney Botanic Gardens, the collection and preservation of plants, plant material and plant information was the key factor in its institutional growth. This facilitated the growth of its built environment, and reputation resulting in an understated authority as one of the primary centres for botanical science in relation to the settlement of Australia. This was not the collecting that Griffiths' explored as part of an antiquarian imagination:⁴³ collecting mostly associated with an amateur quest for understanding the world. Reynell Eveleigh Johns provided Griffiths with an interesting case study for the methods and scope of amateur collections in the nineteenth century. This included ephemera, objects, taxidermied animals and stories creating an eclectic array of curiosities. Griffiths' was particularly interested in the activities of collectors of artefacts of indigenous life, including skeletal remains, stone implements and other objects of material culture. He calls this 'frontier archivism' and although it seems that Johns' collection had an intrinsic value, it was clear that it was also positioned within 'the abstract international intrigue' generated by anthropologists and the growing body of knowledge about indigenous life in Australia.⁴⁴ This was collecting to provide an antiquity for a nation in formation. Griffiths argued that an antiquarian imagination was the standpoint from which this borrowed antiquity was constructed. The collection at the Sydney Botanic Gardens can be distinguished from these kinds of collectors through a claim to usefulness.

⁴³ Tom Griffiths, *Hunters and Collectors: The Antiquarian Imagination in Australia* (Cambridge: Cambridge University Press, 1996).

⁴⁴ *Ibid.*, 28-85.

When used in relation to botany, the term useful draws the collection and preservation of plant life away from the paradigms often used to understand colonial collections. In relation to the Melbourne Botanic Gardens, Therese Wyborn argues that this 'pursuit of useful knowledge' was largely confined to the didactic spaces of the living collection.⁴⁵ However, in Sydney in the 1890s usefulness was layered into the operational functions of the place. If it could be discerned that a plant had uses, then it could be circulated through the global networks of knowledge exchange. For a plant to *be* useful, a use had to be found within the cultural, social, material and economic milieu of colonial life. Usefulness was not restricted to Australia, but instead was used to demarcate the capacities and possibilities of plants across the globe. Usefulness was a way of converting a raw material into a commodity. It was not necessary for that commodity to have a monetary value, as such, but it did need to be able to be recognised in how it might play a part in colonial life.

During the nineteenth century live plants and specifically related botanical information were transplanted into imperial settings with the help of botanic gardens. Movement of key crops and ideas about them have been tracked in relation to tea *Camellia sinensis*,⁴⁶ rubber *Hevea brasiliensis*, *Manihot glaziovii*, *Castilloa elastica*, *Ficus elastica*, *Cinchona* *Cinchona calisaya*,⁴⁷ Sugar Cane *Saccharum officinarum*,⁴⁸ Sisal *Agave sisalana*, *Agave fourcroydes*⁴⁹ and forestry practices.⁵⁰ These plants were useful to colonists and usually involved the

⁴⁵ Wyborn, "In Pursuit of Useful Knowledge: The Nineteenth Century Concept of the Botanic Garden."

⁴⁶ Calestous Juma, "Explorations in Historical Botany," in *The Gene Hunters: Biotechnology and the Scramble for Suitable Seeds* (London: Zed Books, 1989).

⁴⁷ Kavita Philip, "Imperial Science Rescues a Tree: Global Botanic Networks, Local Knowledge and the Transcontinental Transplantation of *Cinchona*," *Environment and History* 1 (1995).

⁴⁸ Daniel Headrick, *The Tentacles of Progress: Technology Transfer in the Age of Imperialism, 1850-1940* (New York: Oxford University Press, 1988).

⁴⁹ Lucile Brockway, *Science and Colonial Expansion: The Role of British Royal Botanic Gardens* (New York: Academic Press, 1979).

⁵⁰ Richard Grove, *Green Imperialism: Colonial Expansion, Tropical Island Edens, and the Origins of Environmentalism, 1600-1860*, Studies in Environment and History. (Cambridge; New York: Cambridge University Press, 1995).

movement from an indigenous culture in one part of the globe to zone of plantation economy in another. Normally these plants were then cropped, processed and sold as commodities in both domestic and imperial marketplaces. While these important economic crops have been the subject of much research,⁵¹ it would be a mistake to think that usefulness was confined to these big economic products.

Usefulness extended through a whole range of striations of colonial life. It provided a juncture from which plants travelled into, within and beyond the colony, state and nation.

Thomas Croxen Archer wrote in 1853:

Vegetable products constitute nine-twelfths of the whole commerce in raw produce which employs the vast mercantile marine of this great kingdom. They furnish us with the bulk of our food and clothing, medicine, and building materials, and with many other necessaries and luxuries.⁵²

In every aspect of life, plants had a role to play, underfoot and overhead, pen and paper, for beauty and for profit. In everyday life, at all scales, plants were useful.

⁵¹ Anna Pavord, *The Tulip* (London: Bloomsbury, 1999), Judith Ann Carney, *Black Rice: The African Origins of Rice Cultivation in the Americas* (Cambridge, Mass.: Harvard University Press, 2001), Judith Carney, "Out of Africa: Colonial Rice History in the Black Atlantic," in *Colonial Botany: Science, Commerce, and Politics in the Early Modern World*, ed. Londa Schiebinger and Claudia Swan (Philadelphia: University of Pennsylvania Press, 2005), Londa Schiebinger, *Plants and Empire: Colonial Bioprospecting in the Atlantic World* (Cambridge, Mass: Harvard University Press, 2004), Eric Hansen, *Orchid Fever a Horticultural Tale of Love, Lust and Lunacy* (London: Methuen, 2000), Tim Ecott, *Vanilla: Travels in Search of the Ice Cream Orchid* (New York: Grove Press, 2004), Michael Pollan, *The Botany of Desire: A Plant's-Eye View of the World* (London: Bloomsbury, 2002), Amy Butler Greenfield, *A Perfect Red: Empire, Espionage and the Quest for the Colour of Desire* (New York: Harpers Collins Publishers, 2005), Sidney Wilfred Mintz, *Sweetness and Power: The Place of Sugar in Modern History* (New York: Penguin Books, 1986).

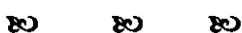
⁵² Thomas Croxen Archer, *Popular Economic Botany or Description of the Botanical and Commercial Characters of the Principal Articles of Vegetable Origin, Used for Food, Clothing, Tanning, Dyeing, Building, Medicine, Perfumery, Etc.* (London: Reeve & Co., 1853), vi.

Upon taking up the directorship of the Sydney Botanic Gardens, this notion of usefulness infiltrated all of the scientific work and intellectual orientations of Joseph Maiden's time in that position. Usefulness was a catch-all phrase, so it could be employed to describe a wide and varied range of work in the gardens. It was useful to provide park spaces for the rational recreation of the people of Sydney. It was useful to create a collection of plants, both living and dead. It was useful to work on the scientific understandings of Australian Botany. It was useful to grow and supply plants for urban and town planning. It was useful to research solutions to environmental disasters. It was useful to provide information about the development of an export commodity. In each instance, the collection owned by the Sydney Botanic Gardens was used to work with plants and issues of settling Australia. In each case the usefulness depended on the capacity of the Sydney Botanic Gardens to mobilise, change, experiment, grow and exchange plants from one forum to another.

Usefulness conceptualised land, place, ecology and environment in a particular way that was different to the manner and approach of indigenous people. So the term useful must also consider, useful to whom? Tuhiwai Smith writes that

the most fundamental clash between Western and indigenous belief systems ...stems from a belief held by indigenous people that the earth is a living entity. ... From this belief indigenous values and practices, social structures, and relations are derived, which places indigenous views in direct opposition to Western values.⁵³

In articulating the Sydney Botanic Gardens as an agent of settler-colonialism, usefulness was also a way of excluding, ignoring and suppressing indigenous life in Australia



⁵³ Tuhiwai Smith, *Decolonizing Methodologies: Research and Indigenous Peoples*, 99.

The archive of the Sydney Botanic Gardens, the herbarium, the library, the museum and the gardens combine to provide the primary resource of this thesis. While some administrative and almost all of the personal records of personnel have not survived, the bulk of the collection remains an active and vital part of the work of the Sydney Botanic Gardens. This means that the collections, such as those still held in the library and herbarium, are primary sources that inform this analysis of the work of the Sydney Botanic Gardens in this earlier period. Although working in an entirely different field, Gillian Cowlishaw captures the importance of considering archival material as documents that constitute the workings of the institution. She says, using Todorov as inspiration: ‘written sources have to be “interrogated as actions, not as descriptions” that is, as a constitutive part of the reality about which they are sources of information.’⁵⁴

While Maiden collected plants, plant material and plant information into the Sydney Botanic Gardens, it is the way that he transformed this material as he transferred it that is of interest. In this way, the collection of transnational botanical knowledges was a resource of documents that was constitutive of Sydney Botanic Gardens intervention into settlement in Australia. This means that the botanical knowledges produced by the institution during this time are the main primary resources of this thesis. The herbarium specimens, the letters, the registers of seeds exchanges, the lists of nursery plants are important sources to demonstrate the functions and functionality of the institution. The varied publications, particularly those of Joseph Maiden, demonstrate how the collections were used, translated and changed into knowledge.

⁵⁴ Gillian Cowlishaw, *Rednecks, Eggheads and Blackfellas: A Study of Racial Power and Intimacy in Australia* (St Leonards, N.S.W.: Allen & Unwin, 1999), 7.

These include newspaper articles, scientific documents, published botanical notes and narratives of collecting trips and serialised publications that eventually became books.

Joseph Maiden authored a number of books which are all part of the body of sources for this thesis. These include: *The Useful Native Plants of Australia, Wattles and Wattlebarks, The Forest Flora of New South Wales, A Critical Revision of the Genus Eucalyptus* and *The Forestry Handbook*. Maiden's evidence given at the *Royal Commission for the Improvement of Sydney and its Suburbs* and *Royal Commission on Forestry* demonstrate the public authority that Maiden exercised in relation to botanical knowledges. Maiden and other Sydney Botanic Gardens staff also produced a range of reports for parliament, including the annual reports of the institution and more specialised reports, such as the *Report on Spotted Gum, with Especial Reference to Its Value for Wood-Paving*. These sources all demonstrate how the collection was used to mobilise and circulate plants, plant material and plant information.

Supplementing the material that was directly produced by the Sydney Botanic Gardens are other primary resources that enrich the analysis. The records of government, that is, parliamentary debates, votes and proceedings, budget documents and records of public service employment all helped to fill out the details of the workings of the institution and the contexts in which different settlement issues emerged. Photographic evidence was also important in visualising environmental changes created with wattles, prickly pear and street trees. Other scientific writings that mirror and complement those produced by the Sydney Botanic Gardens allowed a fuller picture of the effect of mobilising botanical knowledges. This is particularly true of Part two of the thesis, for without understanding the professional

sphere in which the Sydney Botanic Gardens worked, it is impossible to understand the impact of the mobilised botanical knowledges.

Many Indigenous scholars have analysed the disjuncture between indigeneity and the records kept in Government archives. Stephen Kinnane,⁵⁵ Kim Scott, Hazel Brown⁵⁶ and Lynette Russell⁵⁷ all piece together the stories of family and kin through a combination of oral and archival sources. Each demonstrates that records kept, while providing important detail and perspectives on indigenous lives they only provide partial understanding of each narrative. Each oral history challenged the veracity and authority of the archival representation of kin. These histories expose how archival records evidence the attitudes of colonists, administrators and bureaucrats towards indigenous people. Stephen Kinnane states, 'This is how others have seen us.'⁵⁸ In this way, the records demonstrate as much about those doing the gathering of records as it does about indigenous people and life. As the Sydney Botanic Gardens established the plant archive, the same process was enacted in relation to indigenous plants. Rather than creating the conditions where complete representation of the botanical world was made possible, the critique from indigenous scholars warns that collecting practices imbued the collection with colonial politics as much as colonial science.

The collecting policies of the archives discussed by these scholars and writers employed a set of techniques that preserved knowledge by removing it from the cultural context that gave it particular meaning. Therefore archives can never offer a complex preservation of indigenous

⁵⁵ Stephen Kinnane, *Shadow Lines* (Fremantle, W.A.: Fremantle Arts Centre Press, 2003).

⁵⁶ Kim Scott and Hazel Brown, *Kayang & Me* (Fremantle, W.A.: Fremantle Arts Centre Press, 2005).

⁵⁷ Lynette Russell, *A Little Bird Told Me: Family Secrets, Necessary Lies* (Crows Nest, NSW: Allen & Unwin, 2002).

⁵⁸ Kinnane, *Shadow Lines*, 127.

culture, or any other culture for that matter. This does not mean that archives are unimportant to indigenous people, but that the records only ever provide partial representations that were always created outside the frameworks of indigenous knowledge. Historians are well aware that the records kept in archives are incomplete. Even comprehensive record-keeping can fall victim to flood, fire and famine. Collecting and preservation policy can be used as tools for the destruction of records, just as much as for preservation. The Sydney Botanic Gardens archive is woefully incomplete in regards to the records that Maiden produced and accumulated. His notebooks from collecting trips, the bulk of inward and outward correspondence and many other items have not survived. These records are absent. However, this was not the same as an approach to record-keeping that ignored the complexity of indigenous knowledge/life/culture altogether, thereby creating a different sort of absence.

Indigenous scholars argue that collecting policies for archives ensured that some types of evidence of the past are valued and privileged over others. In the gathering of documents, records and paperwork that pertain to the workings of bureaucracy, without alternate reading strategies, it is imperial history that comes to be created. The Sydney Botanic Gardens archive under-represents the importance of *country*⁵⁹ to indigenous life, at the same time that collecting plants from *country* was a crucial aspect of their work. Here, instead of imperial history, it was colonial science that stands as the obvious relation to the archive.

⁵⁹ *Country* is the term used by indigenous people to refer to land connected with their skin. I italicise the term to highlight that this is a word from another language system. Although an English word, its reference points are from indigenous world views.

One of the main thrusts of Keith Windschuttle's 2002 *The Fabrication of Aboriginal History*⁶⁰ was that the thesis of frontier wars written by historians such as Lyndall Ryan and Henry Reynolds was unsustainable, because it could not be substantiated by the documentary evidence available in traditional forms of archival evidence. Windschuttle was particularly suspicious of oral testimony and was quick to disregard the evidence from convicts, giving a class bias to the evidence he was prepared to accept.⁶¹ Carolyn Landon enlists Derrida to articulate the type of awe that Windschuttle experiences when he privileges this narrow set of evidentiary documents. 'The Archive is a repository for stories,' she writes. 'Its ledgers, letters, registers, reports, minutes memos and articles all contain stories and are the stuff from which stories can be made.'⁶² This is, she states 'archive fever' which has the capacity to blind historians to the other sorts of evidence that are needed to juxtapose, entangle, challenge and refute those available in the archive.

These arguments about the veracity of archival material have been challenged from within the discipline of history over the twentieth century.⁶³ Writing in 1961, E H Carr emphatically warned 'documents are essential to the historian. But do not make a fetish of them.'⁶⁴ Historians of the French *Annales* tradition followed Marc Bloch to broaden their interpretation of documentary sources to include material culture.⁶⁵ Environmental historians

⁶⁰ Keith Windschuttle, *The Fabrication of Aboriginal History: Van Dieman's Land 1803-1847*, vol. 1 (Sydney: Macleay Press, 2003).

⁶¹ See for example the differences between Windschuttle's version of the events at Risdon Cove and those articulated by Philip Tardif. The first depends entirely on 'official' records and the second argues for the inclusion of evidence provided by convicts and oral testimony of indigenous people. Phillip Tardif, "Risdon Cove," in *Whitewash: On Keith Windschuttle's Fabrication of Aboriginal History*, ed. Robert Manne (Melbourne: Black Inc. Agenda, 2003), 218-44.

⁶² Carolyn Landon, *Jackson's Track Revisited: History, Remembrance and Reconciliation* (Melbourne: Melbourne University Press, 2006), 2.3.

⁶³ Ann Curthoys, *Is History Fiction?* (Sydney: University of New South Wales Press, 2006).

⁶⁴ E H Carr, *What Is History?*, 2nd ed. (London: Penguin Books, 1987), 19.

⁶⁵ Pamela O Long, "The Annales and the History of Technology," *Technology and Culture* 46 (2005): 177-86, Marnie Hughes-Warrington, *Fifty Key Thinkers on History*, Routledge Key Guides. (London; New York: Routledge, 2000), 8-16.

have argued for the landscapes themselves to be added to evidentiary resources.⁶⁶ Feminists also provided a challenge to traditional forms of narrative construction through their insistence that archives, which reified patriarchy, needed to be treated with caution and read against the grain in order to provide evidentiary basis for gendered histories.⁶⁷ Oral history has provided yet another challenge to bureaucratically preserved paperwork.⁶⁸ Most historians recognise the need to work from a range of sources to construct narratives that fill out the detail and nuance of the historical past. As Indigenous historian Vicki Grieves argues

History, by its nature, is an ongoing discourse. The sources that inform us of our past have to be trawled over and over again, in light of new understandings, and layer upon layer of interpretations developed over time.⁶⁹

Indigenous scholars have encountered all of these problems in the archives: the absence of official documents; the need to broaden the possibilities of what counts as archival evidence; to read against the grain of the official view and finally to treat such archives sceptically. What this decolonising methodology demonstrates, starkly at times, is that the archive was structurally developed through its past collecting practices as a way of understanding colonialism that constantly reiterates the dominance of ideology of these scientists in relation to indigenous people and their environments. From a decolonising perspective, the Sydney Botanic Gardens, as an Archive, was also constructed through these kinds of collection policies.

⁶⁶ In Judith Carney's brilliant *Black Rice* the physical changes to wetlands in Georgia and South Carolina were used as evidence of the transfer of technologies of Senegalese rice farming systems in the Slave trade era. Carney, *Black Rice: The African Origins of Rice Cultivation in the Americas*, Carney, "Out of Africa: Colonial Rice History in the Black Atlantic."

⁶⁷ Beverley Southgate, *History: What & Why?* (London: Routledge, 1996), 94-100.

⁶⁸ Heather Goodall, "Aboriginal History and the Politics of Information Control," in *Memories and Dreams: Reflections on Twentieth-Century Australia: Pastiche II*, ed. Penny Russell and Richard White (St. Leonards, NSW: Allen & Unwin, 1997).

⁶⁹ Vicki Grieves, "Windschuttle's Fabrication of Aboriginal History: A View from the Other Side," *Labour History* 85 (2003): 17.

As a result this thesis cannot examine what indigenous knowledges of plants were within *country*, but it does examine the ways in which the Sydney Botanic Gardens approached the same tracts of land for collecting trips. This thesis does not analyse the linguistic richness and variation of indigenous names for plants found in Australia, but it does examine the manner in which names, including Aboriginal names, were approached for the formal scientific descriptions produced at the Sydney Botanic Gardens. Scientific descriptions that were so crucial to possessing known land. It cannot examine how indigenous people and their spirituality were always connected to land, flora and fauna, but it does look at how newcomers claimed a possession of Australian land by drawing important cultural associations with both *Acacias* and *Eucalyptus*.⁷⁰ The hypothesis of this thesis is that the Sydney Botanic Gardens played a key role in supporting the intensification of colonial settlement through its attempts to command and move botanical knowledges drawn from transnational networks. In this regard, the chapters are arranged to build up a picture of the diversity of the work of the Sydney Botanic Gardens. Each chapter will demonstrate how this institution worked transnationally from within Australia on a whole range of issues pertaining to cultural and environmental settlement.



This thesis is organised into two parts. The first part is concerned with the science and scientific practices of the Sydney Botanic Gardens. It is the circulating references of colonial botany that became the constituting infrastructure of transnational networks. Bruno Latour

⁷⁰ Throughout this thesis, scientific names replicate their usage in the primary sources. I acknowledge in many instances taxonomic literature has evolved since 1924. Some of these names have changed. However, I felt it was important to use nomenclature from the historical period under consideration to avoid confusion.

argues that 'yes, scientists master the world, but only if the world comes to them in the form of two-dimensional ... combinable inscriptions.'⁷¹ Scientists moved the environment through the production of papers, specimens – both living and dead – letters, illustrations and photographs. So considering how these knowledges were produced is crucial to understanding the transnational networks used in the service of settlement. These inscriptions are, for Botanic Gardens, the markers that help them to confidently negotiate the Australian environment as part of a bigger world. Scientific representation, regardless of which form it takes always links back to the living and to local ecosystems.

Representations overcome distance, but they also transform or translate objects into something other than what they are in nature. As an object moved as a textual representation, it was displaced and open to translation into knowledge, information and narratives. This knowledge, having circulated through botanic gardens all over the world, had a habit of returning home, though, when it finally came back to Australian environments, it never looked the same as when it entered the colonial laboratory in the first place. While the regulated system of European science allowed for exchange across borders, these networks, with their constant translation along long chains of distance, enabled the creation of colonial knowledge and colonial environments which in turn had local consequences.

The first chapter is a biography of the Director of the Sydney Botanic Gardens Joseph Maiden. It will examine the early influences on his career and life before he joined the Sydney Botanic Gardens. Scientific practices of individual botanists helped to create the very institutions that they worked in, flowing through to the capacity of the institution to provide a

⁷¹ Bruno Latour, *Pandora's Hope: Essays on the Reality of Science Studies* (Cambridge, Mass.: Harvard University Press, 1999), 29.

platform for intervention. Jim Endersby argues that by 'focusing on what naturalists *did* gives us a better understanding of the nature of science because studying practice illuminates and connects everything.'⁷² As such this biographical chapter weaves the detail of the institutional collections into this story. Understanding the relation with the collection is as crucial to the operative force of the institution as understanding the influences in Maiden's life. Man and institution combined to create, enable, enforce, assist and support the settlement processes under scrutiny in this thesis.

The second chapter examines botanical collecting. This type of collecting provided the raw material for the basis upon which the institution operated. The cheapest and most readily available way to accumulate matter from the Australian environment was to mount botanical collecting trips to sample Australian flora from a range of places. In 1900 alone Maiden and his staff took botanising tours to Mount Kosciuszko,⁷³ Jenolan Caves, Lord Howe Island, Melbourne, Dubbo, Naromine, Clarence Siding, Appin, Shoalhaven gullies, King's Tableland, Burragorang Gorge, Mount Tomah, Tenterfield and Mount Spiraby.⁷⁴ This chapter will examine the way in which these collectors travelled through New South Wales, what they saw and how their vision was constructed by the influences of science and settlement. This was a cost effective way of maintaining the best specimens for the Sydney Botanic Gardens, but was also entangled with a range of other cultural issues.

⁷² Jim Endersby, *Imperial Nature: Joseph Hooker and the Practices of Victorian Science* (Chicago: University of Chicago Press, 2008), 7.

⁷³ Modern spelling is used for this mountain throughout the thesis, except where quoting directly from the sources. Maiden consistently spelt it without the 'z' – Kosciusko.

⁷⁴ Maiden, "Report on Botanic Gardens and Domains for Year 1899," 4.

Once material was returned to the Sydney Botanic Gardens, other sorts of knowledges were produced from the collecting activities. The third chapter looks at the writing of the gum tree, blackbutt, into the scientific description of the *Eucalyptus pilularis*. A description was one of the ways that botanical knowledges were made mobile in the transnational botanical information network. Scientists, here Joseph Maiden, worked with material gathered through collecting to translate the physical material of eucalyptus into a textual representation of the plant. This had the effect of overwriting indigenous knowledges and relegating such knowledges to primitivity. Naming was a very important part of scientific work that allowed plants to be understood and then mobilised in networks of botanical exchange. A close reading of the scientific description provides an understanding of the manner in which a range of groups; scientists, English speakers and indigenous people were represented as these documents travelled in the networks of exchange.

The fourth chapter considers the networks of reciprocity that transnationalised botanical knowledges. Correspondence between the Sydney Botanic Gardens and other people and institutions was local, international and transnational. This chapter argues that correspondence needs to be understood as an infrastructure through which a full range of other types of botanical material travelled. Letters show, in some cases, the building of personal relations over time and distance. However, the bulk of the institutional correspondence was the method for circulating plants, plant material and plant information. Seeds, plants, plant cuttings, specimens and illustrations all travelled through these networks. In addition, correspondence was also entangled with the exchange of publications, reports, books and pamphlets. In this way botanical knowledges were mobilised, creating a bulk of transnational resources from which the Sydney Botanic Gardens could draw.

Part two of the thesis is concerned with how these practices of the Sydney Botanic Gardens affected three different sites of settlement. While this was not a comprehensive inventory of the places in which the Sydney Botanic Gardens intervened, it does provide three case studies of the ways in which these botanical knowledges supported settlement. Each of these chapters centralises the narrative of plants. Prickly pear, wattles and street trees all concretise the practices that were teased out in part one, thereby demonstrating the role of the Sydney Botanic Gardens within these specific narratives of plants. While part one considers how botanical knowledges were produced, part two considers what happens to those knowledges as they are mobilised. Together they demonstrate the multifaceted work of supporting settlement through the movement of botanical knowledges.

The fifth chapter is a transnational tale of the *Opuntia* species and the transformation of parts of Australia into prickly pear land. Prickly pear was initially supported by the Sydney Botanic Gardens as a fodder plant for cattle and sheep. The perception of the plant as drought resistant saw it hailed as a way of combating the variable climate of inland New South Wales. The outcome of the introduction of this species was the creation of a hybrid environment that displaced hooved animals and impeded the movement of farmers and agriculturalists into areas set aside for closer settlement. The overwhelming success of the naturalisation of the prickly pear affected the possibility of the closer settlement of large areas of land in northern New South Wales and southern and central Queensland. As the prickly pear became a problem, the Sydney Botanic Gardens, amongst other groups, used their access to the transnational resources of the botanical network to mobilise methods of dealing with this pest plant.

The sixth chapter is about the intertwined relationship of economic botany and botanic nationalism of wattle. Wattle was taken up as a symbol of the nation over the time of Federation. It was linked with a range of metaphors of belonging and settlement for non-indigenous people living in Australia. Imbedded in this symbolism is the history of wattle as an indigenous plant used in the manufacture of leather. Maiden participated in both these areas. He was the president of the Wattle League in New South Wales and the author of an important treatise on wattle production for tanning. This chapter demonstrates the role of this institution in shaping reports, and advice on how wattle could be taken up as a plantation crop in the emerging mixed economy of rural Australia. This chapter also demonstrates that the transnational networks facilitated the wattle's movement to other places. Maiden and the Sydney Botanic Gardens participated in the export of botanical knowledges to Natal in South Africa. Wattles helped to indigenise Australians at the same time that their economic potential was lost to an international competitor.

The seventh chapter considers the work of the Sydney Botanic Gardens in providing plants for urban and town planning. When Maiden commenced work in 1896, the Campbelltown nursery was already an established part of the institutional work. The Sydney Botanic Gardens utilised the knowledge and supply of trees, in seed and seedling form, from a variety of countries to augment this nursery. One of the roles of the Sydney Botanic Gardens was to supply trees to public institutions across the state. Trees were supplied to local councils and municipalities for inclusion in streets to promote healthy urban environs. This meant replicating a model of urban planning that was used in all continents across the globe. Street trees also consolidated urban plans that reinforced the spatial segregation of towns as

available to settlers, not indigenous people. Maiden advocated the use of trees in streets to civilise urban environments, and in this way contributed to an aesthetic of settler-colonialism.

By the late nineteenth century the Sydney Botanic Gardens were commonly understood as a special type of urban park. Since its establishment at Farm Cove on Port Jackson's foreshore in 1816, the Sydney Botanic Gardens had evolved as a creatively diverse and multifaceted institution. It sometimes acted as an acclimatisation centre, where plants from other places were nursed and nurtured into a naturalised state. It was also an experimental station for applied research working closely with local business communities, whether this was pastoral interests, the agricultural sectors, or small business nurseries. Plants were trialled that were expected to be of commercial benefit for local communities, and information about those plants promoted to the public. In this way the Sydney Botanic Gardens contributed to settling Australia by mobilising botanical knowledges.

PART ONE

PRODUCING BOTANICAL KNOWLEDGES

Chapter One

Joseph Maiden, Scientific Practice and the Collections of the Sydney Botanic Gardens

This chapter is about Joseph Maiden, the development of his scientific practices over his career and material manifestation of those practices in the Sydney Botanic Gardens collections. Unpacking these intertwined stories establishes the reasons why the Sydney Botanic Gardens expanded at a time when other institutions were contracting. By harnessing the scientific practices to supporting settlement, Maiden carved a place for the Sydney Botanic Gardens where they could grow and thrive. As such this chapter will examine the career pathway of the Director. I will consider his early education in science and his curatorship of the Technological Museum as sites where he developed the practical side of his work. These practices, especially in the field of economic botany, fed into a professional reputation and stature connected to the museum. I will examine how Maiden perceived the role of public research institutions and his projection of this aspect of the work into the public arena. Once at the Sydney Botanic Gardens these professional, disciplinary, bureaucratic and public practices can be materially understood by considering the way in which the collections grew and changed under Maiden's management.

Early Life

Joseph Henry Maiden was born in London 1859, but grew up in Manchester with his two sisters Ann and Elizabeth. Manchester was an industrial city with sharp social and spatial divides between the rich and the poor.¹ Maiden's father was a clerk in a paper warehouse, respectable and active in the local community. In 1871 the Maidens moved to London, where they lived in Islington. In April 1872, Joseph was enrolled in the London Middle Class School. Elementary education generally finished at the age of twelve, when industrial cities of the Victorian age absorbed the children into the work force. The middle class schools educated those children who showed an aptitude for learning, thought of as promising sons of a demographic stratum that included artisans, administrators and other sorts of trades' people. These schools provided an opportunity to prepare for a university education. It was here that Maiden was first given the responsibilities and care of a museum collection.

Maiden's memory of this school museum was that it was a collection of 'raw products which enter(ed) the Port of London through the agency of Customs' officials.'² Maiden's biographer Lionel Gilbert speculated that this collection was used as a teaching tool by the staff of the school in providing 'object lessons' for boys. An object lesson was based on the examination of some sort of material object, around which the lesson was planned. This emphasis on objects, Donald Horne argued was 'symbolic of the materialism of the industrial age.'³ Object lessons in botany revolved around plants and plant material collected, but also meant

¹ Asa Briggs, *Victorian Cities* (Harmondsworth: Penguin, 1968), 88-138.

² Cited in Gilbert, *The Little Giant: The Life and Work of Joseph Henry Maiden 1859-1925*, 19.

³ Cited in Ross Gibson, "Exhibiting: Wonders of the World on Show," in *Yesterday's Tomorrows: The Powerhouse Museum and Its Precursors 1880-2005*, ed. Graeme Davison, Kimberley Webber, and Powerhouse Museum. (Haymarket, N.S.W.: Powerhouse Publishing in association with UNSW Press, 2005), 85, Donald Horne, *The Great Museum: The Re-Presentation of History* (London; Sydney: Pluto Press, 1984).

venturing out of the classroom into the field. They connected teaching and learning with collection items in the pursuit of knowledge.

Anecdotal evidence suggests that it was here at the London Middle Class School that Maiden met his first mentor Frederick Settle Barff.⁴ Barff studied chemistry at the London University College from 1864 and held a range of teaching posts after that time. Between 1868 and 1885 he taught at Beaumont College on the island of Jersey. He was the Professor of Chemistry at the Catholic University College, Kensington in addition to working at the Royal Academy of the Arts. He also gave a guest lecture series called the Cantor Lectures to the Society for the Encouragement of Arts, Manufactures and Commerce. Barff's eclectic array of teaching positions had the effect of creating a broad scale audience for his brand of chemical science. He communicated with school boys, undergraduates, learned societies, and self educated working men. Barff's publications in Robert Brown's *Science for All* series advocated a science that should be useful beyond the laboratory responding to questions such as 'Can Science Conquer Rust?'

Gilbert records Maiden's employ with Barff reaching, after four years working in his chemistry laboratory, the lofty status of principal assistant. Early exposure to Barff's style which circulated between pure and applied science and communicating with a broad audience were seeds that Maiden nurtured through his career. His first foray into this didactic world was the presentation of a science course to 'working men in the city and suburbs of London.'⁵ While the time served in the laboratory grounded Maiden in the practices of chemistry, the relations developed with Barff were significant enough for Barff to provide letters of

⁴ Lucas, "Joseph Henry Maiden 1859-1925 (Memorial Series No.3)."

⁵ Gilbert, *The Little Giant: The Life and Work of Joseph Henry Maiden 1859-1925*, 19.

introduction to his young assistant when he departed for Australia. Maiden always recalled this time fondly and attributed Barff with his early traction in a scientific career. After declining offers to Christ's College, Cambridge, and a position with the Royal Arsenal at Woolwich, Maiden enrolled in science at the University of London, continuing his work with his mentor until 1880.⁶

Lionel Gilbert argues that Maiden came to Australia to escape the dank cold environs of his English upbringing.⁷ He embarked on this trip to Australia on 10 November 1880 'for the benefit of his health.'⁸ For a young man with recurrent respiratory problems, a sea voyage was a chance to partake in the fresh air and amenable climate of the colonies. This was considered a therapeutic enterprise. Maiden grew up in 'the city, in Manchester and subsequently in London. Industrial pollution, cramped living quarters and archaic sanitation systems all contributed to the idea that the city was unhygienic.'⁹ There was a debate circulating at the time regarding the unsuitability of tropical Australia for healthy white male bodies.¹⁰ Hence it was not to tropical Australia that Maiden travelled, but to temperate Sydney. In Maiden's life story this movement from England to Australia was in many ways unspectacular. Migration from England and Britain was desired by colonies needing to boost population and had consistently drawn from this geographic area throughout the nineteenth century.¹¹ The cultural and economic ties to Britain meant that English citizens were

⁶ 'Mr J. H. Maiden' *Sydney Mail*, 20 June 1891, 1380.

⁷ Gilbert, *The Little Giant: The Life and Work of Joseph Henry Maiden 1859-1925*, 23-24.

⁸ Lucas, "Joseph Henry Maiden 1859-1925 (Memorial Series No.3)," 355.

⁹ Lewis Mumford, *The City in History: Its Origins, Its Transformations and Its Prospects* (San Diego: Harvest Book Harcourt, 1961), Briggs, *Victorian Cities*.

¹⁰ See for example, David Walker, "Climate, Civilization and Character in Australia, 1880-1940," *Australian Cultural History* 16 (1997), Alison Bashford, "Is White Australia Possible? Race, Colonialism and Tropical Medicine," *Ethnic and Racial Studies* 23, no. 2 (2000).

¹¹ Jupp considers the 1880s the 'last great bursts' of English migration of the nineteenth century. 13. 2% of immigrants to New South Wales in 1891 were English, building on the already well developed base of Englishmen and women in the colony. James Jupp, *The English in Australia* (Cambridge: Cambridge University Press, 2004), 111.

unquestionably welcomed to Australia.¹² Maiden had expected that his visit to Australia would not be permanent, originally booking a return passage.

For men of science, travelling to the south helped to fortify and establish many careers once they returned to Europe.¹³ Jim Endersby argues that Joseph Hooker's journey on the *Erebus* as the assistant surgeon in 1839-43 laid the foundations of a botanical career on his return to Britain.¹⁴ Hooker was the son of the then director of the Royal Botanic Gardens Kew, Sir William Jackson Hooker.¹⁵ Despite this genealogy his career as a professional botanist was by no means secure. The trip to the southern oceans, colonies and continents as the assistant surgeon and naturalist provided material sources for a career in botany. Additionally, Hooker made contact with important local settlers who went on to collect plants on his behalf throughout his life. These features combined to create a base from which Hooker built a professional career back in England. In contrast, by the final decades of the nineteenth century this type of scientific travel was unlikely to have provided an impetus for Maiden's journey to Australia. Instead he was a new type of traveller – one whose direction changed once he arrived in Sydney, one who decided to stay on in Australia. Maiden's biographer Lionel Gilbert hints that this was a matter of chance far more than a consciously planned approach to his future.

¹² *Ibid.*, 35-87.

¹³ See for example, Bernard Smith, *European Vision and the South Pacific*, 2nd ed. (Sydney: Harper & Row, 1985), Harry Liebersohn, *The Travelers' World: Europe to the Pacific* (Cambridge: Harvard University Press, 2006), Jean-Marc Drouin, "From Linneaus to Darwin: Naturalists and Travellers," in *A History of Scientific Thought: Elements of a History of Science*, ed. Michel Serres (Cambridge: Blackwell, 2008).

¹⁴ Endersby, *Imperial Nature: Joseph Hooker and the Practices of Victorian Science*, 31-53.

¹⁵ Sir William Jackson Hooker was the Director of the Royal Botanic Gardens, Kew 1841-65. His son Sir Joseph Dalton Hooker became the Assistant Director in 1855 and then assumed the Directorship upon his father's retirement in 1865. He went on to manage the institution for twenty years until 1885.

In Sydney there was a growing local scientific community into which Maiden found his way. Roy Macleod argues that people like Maiden made up a new set of scientific travellers. These men were not so quick to return to England or Europe, but stayed and helped to nurture local sites for scientific work.¹⁶ This represented a shift, from the metropole to the colonies, which Macleod interprets as a sign of progress for Australian settlement. Maiden found that Sydney was a place of opportunity for him. Although his skills in science can only be described as rudimentary, this did not hinder his access to work, or people involved in boosting colonial science. Australia presented the opportunity to build his interest in science, initially fostered at the London University between 1879 and 1880, into a professional career.

As Endersby points out, the possibilities of Maiden even considering science as a career rather than as a gentlemanly pursuit were more common by the end of the nineteenth century. In examining Joseph Hooker's career forged at the Royal Botanic Gardens, Kew, Endersby concluded that the mid nineteenth century saw employment as scientist take hold, with a shift from amateur to professional disciplinary practices.¹⁷ Hooker laboured over the intellectual boundaries of botanical theory by systematising scientific practices, particularly those used in the colonial botanic sphere. As the institutions stabilised and received votes from parliament, so too did the possibility of careers being formed in association with collections. Botanic gardens, as specialist museums, were key sites of this intertwined relationship between institution, career and collections. These factors demarcated the professional, from the gentlemen, amateurs and artisans. If Maiden had travelled to Sydney even twenty years earlier, it is less likely that a permanent paid position in science would have been available to

¹⁶ MacLeod, "On Visiting the 'Moving Metropolis': Reflections on the Architecture of Imperial Science."

¹⁷ P D Lowe, "Amateurs and Professionals: The Institutional Emergence of British Plant Ecology," *Journal of the Society for the Bibliography of Natural History* 7, no. 4 (1976). Ruth. Barton, "'Men of Science': Language, Identity and Professionalization in the Mid-Victorian Scientific Community." *History of Science* 41, no. 1 (2003), Anne Secord, "Corresponding Interests: Artisans and Gentlemen in Nineteenth-Century Natural History," *The British Journal for the History of Science* 27, no. 4 (1994).

him in the colony. Most young men in Australia came to careers in the botanic gardens as gardeners, not scientists. In this way his timing was perfect. Although he had a return ticket to London, he did not go back to England for nearly twenty years. In New South Wales, he found a colony in which his enterprise and determination enabled him to found and forge a career in science at the margins of the scientific world.

Maiden's experience in London prepared him for a narrow band of employment. He had teaching skills; he was proficient in a laboratory and could arrange and care for a collection. Of these it was his teaching that secured him his first employment in Sydney. Gilbert speculates that Maiden held two jobs in his first year in Australia. The first was an unconfirmed role as a tutor for the Macarthur-Onslow children at Camden Park. Although largely known as the centre for the introduction of Merino sheep into Australia,¹⁸ Camden Park also had a long standing and thriving nursery and seed exchange business operating as part of its commercial ventures.¹⁹ There, he came into contact with the aged William Macarthur which was to later prove important in his writing of the eucalyptus species.²⁰ He held a second position delivering a weekly lecture on science at the Technical or Working Men's College in Sydney.

¹⁸ Colin Mills, "The Case of the Missing Notebook," *Australian Garden History* 18, no. 1 (2006), Sarah Franklin, "Colony," in *Dolly Mixtures: The Remaking of Genealogy* (Durham: Duke University Press, 2007).

¹⁹ Gilbert, *The Little Giant: The Life and Work of Joseph Henry Maiden 1859-1925*, 35-38, Alan Atkinson, *Camden*, 2nd ed. (North Melbourne, Vic.: Australian Scholarly Publishing, 2008), 39.

²⁰ Lionel Gilbert points out that there are no official records that support the Maiden family's testimony that he was a tutor for the Macarthur Onslow, but Gilbert, is convincing that this was highly probable. Lucas, "Joseph Henry Maiden 1859-1925 (Memorial Series No.3)."

Technical education was an initiative of the middle class, to provide opportunities through education for working classes.²¹ The last decades of the nineteenth century was a time that universal primary education was being introduced across the country. Education Acts and their attendant bureaucracies were shaping public outcomes through compulsory education for youth. Technical education complimented the emerging system of higher education for the young by providing for mechanics or artisans. Where some pathways could lead from primary education through to university, the technical education was to provide an alternative to secondary education. This created a skilled labour force. As Stephen Murray-Smith and Anthony Dare point out, the terms artisan and mechanic were 'broad parlance for a respectable working class fellow in regular employment.'²² The introduction of such institutes completed what the Victorian philanthropist Francis Ormand called the 'educational chain' operating as they did in tandem with universities and schools.²³ Learning in such a place was shaped through practical considerations in relation to the needs of skilled workers.

Technical colleges leant toward a dependence upon the expertise of a teacher and a receptive, rather than participatory audience. The lecture series provided through technical education focused on the didactic delivery of information.²⁴ In this context, Maiden's contribution was the delivery of a prepared course called 'Science-made-easy.' This was a series of seventeen lectures developed by Thomas Twining specifically for a working man's audience. Topics in the lecture series ranged across mechanical physics, chemistry, botany and physiology providing a series of broad views of scientific endeavour at that time. This was practical and accessible education. The weekly lectures at the college exposed Maiden to this field of

²¹ Stephen Murray-Smith and Anthony John Dare, *The Tech: A Centenary History of the Royal Melbourne Institute of Technology* (South Yarra: Hyland House, 1987), 6.

²² *Ibid.*, 9.

²³ Cited in *Ibid.*, 5.

²⁴ See Philip C. Candy and John Laurent, *Pioneering Culture: Mechanics' Institutes and Schools of Art in Australia* (Adelaide: Auslib Press, 1994).

pedagogy. Throughout his career he was committed to adapting pure science to educational endeavours that broadened knowledge throughout the community.

The Technological Museum

It was during this first year in Sydney that Maiden presented Barff's letter of introduction to Archibald Liversidge, University of Sydney's Professor of Geology and Mineralogy.²⁵ Liversidge had lived in Sydney for seven years by this time and was vested with the task of developing geological work at the university. He always worked beyond the strict confines of the academy and saw a role for science in the didactic experiences of the public sphere.²⁶ He was on the foundation committee of the Technological Museum, initially providing a survey report of other such institutions across England and Europe. He visited and assessed fifteen European museums.²⁷ Liversidge envisaged a museum that drew from the philosophies of many of these places, in the process creating an institution that was not like any of them.²⁸ His vision for the institution was that it would combine the best of 'looking by learning' whilst offering 'lectures and be a place to generate and apply new knowledge.'²⁹ He valued the combination of educational and research possibilities available for the institution.³⁰ This

²⁵ Archibald Liversidge, "Report Upon Technological Museums and Scientific and Technical Instruction and Evening Classes," (Sydney: Votes and Proceedings Legislative Assembly New South Wales, 1879-80).

²⁶ Roy Macleod, "Founding: South Kensington Comes to Sydney," in *Yesterday's Tomorrows: The Powerhouse Museum and Its Precursors 1880-2005*, ed. Graeme Davison, Kimberley Webber, and Powerhouse Museum. (Haymarket, N.S.W.: Powerhouse Publishing in association with UNSW Press, 2005).

²⁷ Museums of Science and Art Department at South Kensington, Benthall Green, Edinburgh and Dublin; the Museum of Practical Geology, the Museum of Economic Botany at Kew, the Parkes Museum of Hygiene, the Museum of Architecture at Westminster, the Patent Office Museum, the Industrial Museum at Berlin, the Vienna Museum of Art and Industry, the Bavarian National Museum at Munich, the Conservatoire des Arts et Métiers and the Hôtel de Cluny at Paris, and the Royal Italian Industrial Museum at Turin. Archibald Liversidge, "Report Upon Technological Museums and Scientific and Technical Instruction and Evening Classes," (Sydney: Votes and Proceedings Legislative Assembly New South Wales, 1879-80): 801.

²⁸ Macleod, "Founding: South Kensington Comes to Sydney."

²⁹ Ibid.

³⁰ D. P. Mellor, "Liversidge, Archibald (1846 - 1927)," in *Australian Dictionary of Biography Volume 5* (Melbourne: Melbourne University Press, 1974), 93-95.

meant in addition to recommending exhibition space and lecture facilities he also advocated a chemical laboratory.³¹

In Liversidge's report to parliament, he made a clear recommendation about the management of the museum. He argued that it should not be under a trusteeship, but instead a professional and experienced director should be appointed.³² Liversidge was also aware of the slim vote that a small colony like New South Wales could afford for such an appointment. Maiden was relatively inexperienced, but in his skills and personality, Liversidge must have seen the potential match to the new museum's needs. As a member of the board Liversidge was able to champion Maiden's application for the position of curator, lecturer and secretary.³³ Once the position was secured, he actively mentored Maiden and encouraged his relations within Sydney's scientific community which included Charles Moore, Director of Sydney Botanic Gardens. These relations with Liversidge continued throughout Maiden's career and well after Liversidge returned to England in 1908.³⁴ Maiden looked to Liversidge for advice and guidance on matters as varied and mundane as labels for the museum,³⁵ to the personal exchanges about health and well being³⁶ and the important requests for Liversidge's support in his application for fellowship to the Royal Society.³⁷

³¹ Liversidge, "Technological Museums and Scientific and Technical Instruction and Evening Classes."

³² *Ibid.*: 804.

³³ Gilbert, "From Joseph Banks to Joseph Maiden: Towards a Scientific Botanic Garden.", Gilbert, *The Little Giant: The Life and Work of Joseph Henry Maiden 1859-1925*, Lionel Gilbert, "The Maiden Era 1896-1924," in *The Royal Botanic Gardens, Sydney: A History 1816-1985* (Melbourne: Oxford University Press, 1986).

³⁴ Letter from Liversidge to Maiden, March 26 1912, Maiden's Centennial Manuscripts, RBGS Library Special Collections.

³⁵ Letter from Maiden to Liversidge, 28 April 1882, Sydney University Archives, P.08/S11.1.

³⁶ Letter from Maiden to Liversidge, April 29 1912, Maiden's Centennial Manuscripts, RBGS Library Special Collections.

³⁷ Letter from Liversidge to Prain, Dec 1-2, 1910, Royal Botanic Gardens, Kew, AJCP M741:154-156.

Maiden was opportunistic. He had teaching skills, so initially he made use of these when he arrived in Sydney. Upon meeting Liversidge it was apparent that other skills he brought to Sydney were up for germination. The position at the Technological Museum meant that he could build upon the rudimentary collection management and chemical laboratory skills that were seeded in his early work with Barff.³⁸ One of the underplayed scientific practices that Maiden was beginning to hone was the way in which he built professional networks. Barff, Twining and Liversidge are all acknowledged as key individuals influencing Maiden's career. Barff had championed his laboratory work, Twining had set him up with teaching skills and Liversidge provided a guided opportunity to combine and develop these professional practices. His diffident manner within these hierarchical relations of his early career made him the perfect protégé. Mutual respect was developed through the diligence and hard work that, in Liversidge's case, saw the Museum grow into the institution that he imagined. Maiden mastered networking through these experiences, and was constantly aware throughout his career of the importance of forging links to other people and institutions.

The Technological Museum was housed in three locations during Maiden's curatorship. Firstly at the Palace Gardens; this had been the site of the 1879 Sydney International Exhibition. Liversidge saw the opportunity for the Technological Museum to develop out of the collections that remained after the exhibition closed. Ann Proudfoot argues that the International exhibition was both a model and a bench mark for the new museum.³⁹ While the Sydney collection had the advantage of localised access, Liversidge also urged 'similar

³⁸ "J. H. Maiden 1859-1925," *The New Nation Magazine* (1926): 81.

³⁹ Ann Proudfoot, "Exhibition as Idea for the Powerhouse Museum," in *Colonial City, Global City: Sydney's International Exhibition 1879*, ed. Peter Proudfoot, Roslyn Maguire, and Robert Freestone (Sydney: Crossing Press, 2000), 208.

advantage might also be taken of the Melbourne Exhibition' held in 1880.⁴⁰ Maiden slipped into both the building and ready made collection with its already established ethos of display of economic materials, goods and skills. In the first month of his appointment he set about arranging the objects and seeking out additional material to supplement the remains from the International Exhibition.

The committee and Maiden predicted the opening of the new museum in December 1882, but were thwarted when fire burned the Garden Palace to the ground on the 22nd of September. Into the cinders, ash and smoke went the foundation of the collection. Out of this adversity, opportunity arose. On the second site, always conceived as temporary, Maiden set about beginning the collections again. Maiden took over one half of the Agricultural Hall behind the charred remains of the Garden Palace, sharing it with the Sydney Hospital. From here he set about accumulating a collection of technological, industrial and sanitary objects.

When Maiden dutifully made his first report to the Australian Museum committee in 1883, he had added three categories for collectables to those enumerated by Liversidge in 1879-80.⁴¹ Liversidge's list of fifteen categories included such items as entomological specimens, photography and photographic equipment, sanitary equipment, food specimens, trade journals and patent samples. Maiden's extra categories were chemical and pharmaceutical products, goods and models relating to the military and specimens illustrative of miscellaneous manufactures. These eighteen categories were collected under Liversidge's oft quoted philosophy: 'typical collections of all materials of economic value whether belonging to the

⁴⁰ Liversidge, "Report Upon Technological Museums and Scientific and Technical Instruction and Evening Classes."

⁴¹ Reprinted in Gilbert, *The Little Giant: The Life and Work of Joseph Henry Maiden 1859-1925*, 370.

animal, vegetable or mineral kingdom; there should be specimens to represent those products in all states, from the raw material up through the various stages of manufacture, to the final product or finished article ready for use.'⁴² While this most assuredly provided Maiden with a collecting policy, it also provided the narrative structure for display in the public spaces of the Museum.

Graeme Davison and Richard White both point out that the displays of both the International Exhibition and subsequently the Technological Museum were built around a narrative of progress.⁴³ By taking a raw product and demonstrating how it could be made useful, the exhibits focused on a progressive transformation. This gave the exhibition a national focus, making manifest the desire to harness the land and its produce to an economic imperative through the innovations and possibilities derived through technology. As White argues this was 'analogous to the civilising progress of technology itself.'⁴⁴ While collecting went ahead under these categories, the exhibits were grouped together into three major themes: Economic Zoology; Economic Geology and Economic Botany. This thematic structuring along economic lines was retained in the move to purpose built accommodation adjacent to the Technical College at Ultimo in 1893.⁴⁵

One example of this progressive narrative may have been built in the displays relating to *Eucalyptus pilularis*. Framed herbarium specimens hanging on the walls of the museum gave

⁴² Liversidge, "Report Upon Technological Museums and Scientific and Technical Instruction and Evening Classes," 802.

⁴³ Richard White, "Imagining: Representing Australia," in *Yesterday's Tomorrows: The Powerhouse Museum and Its Precursors 1880-2005*, ed. Graeme Davison, Kimberley Webber, and Powerhouse Museum. (Haymarket, N.S.W.: Powerhouse Publishing in association with UNSW Press, 2005), 128. Graeme Davison in Catherine Freyne, "Spectacle and the City: Sydney's Garden Palace," ABC Radio National, <http://www.abc.net.au/rn/hindsight/stories/2008/2326489.htm>.

⁴⁴ White, "Imagining: Representing Australia," 130.

⁴⁵ Gilbert, *The Little Giant: The Life and Work of Joseph Henry Maiden 1859-1925*, 153.

visitors a feel for the plant in a natural state, while also demonstrating that the plant belonged within the nomenclatural system of Linnaeus.⁴⁶ A timber sample of the tree showed the texture and grain.⁴⁷ Supplementing the timber, were tools like pit saws, as well as axes used in the forestry industry.⁴⁸ Accompanying these technologies were photographs of logging practices and particularly transport: bullock trains, log chutes and light gauge rail.⁴⁹ Photography, considered a technological marvel in its own right, demonstrated the innovations used in the collection of timber like *E. pilularis*. In his publications about the tree, Maiden lists the uses of this hardwood timber as including house and ship building, bridge planking, wood-paving blocks and as sides and head-blocks in railway wagons.⁵⁰ Any of these uses could have been sampled and displayed to show how the raw product progressed once it was in the hands of men.

Liversidge's vision for the Technological Museum had also emphasised the incorporation of a chemical laboratory within the structure of the organisation. The inclusion of this laboratory created a site for research. Maiden, whose background was in chemistry, also had the fundamentals of other scientific endeavours through his teaching of Twinings' course. If the three major themes of the Technological Museum – Geology, Zoology and Botany – were to catalyse the direction of research, Maiden's choice was to narrow the focus. Economic Geology was already a vital field of research in Sydney. Indeed Liversidge himself headed up

⁴⁶ Graeme Davison, Kimberley Webber, and Powerhouse Museum., *Yesterday's Tomorrows: The Powerhouse Museum and Its Precursors 1880-2005* (Haymarket, N.S.W.: Powerhouse Publishing in association with UNSW Press, 2005), 128, 31, 33, 37.

⁴⁷ Ibid.

⁴⁸ Ibid., 87.

⁴⁹ One example of this is a photograph of a timber bridge on the road to Macksville that showed a native stand of Blackbutt located next to logging transport and bridge of *E. pilularis* – a combination of nature versus technology and raw versus useful. This photograph was reproduced in British Association for the Advancement of Science, *Handbook of New South Wales* (Sydney: Edward Lee & Co, 1914).

⁵⁰ Joseph Maiden, "Part 1 No.1 Eucalyptus Pilularis (Smith)," in *A Critical Revision of the Genus Eucalyptus* (Sydney: Govt. Printer, 1903), 29.

the geology and mineralogy teaching and research at Sydney University. In addition, this research field was also serviced by the Museum of Mines and Geology managed by the Department of Mines. On the other hand, Maiden could have pursued Economic Zoology, but it seems that he was less familiar with this area of study. Besides, his background in chemistry would have had a smaller range of possibilities for zoological inquiry. Again, the Australian Museum was well versed in zoological study. That institution's role was to collect, research and display natural history to a Sydney audience.⁵¹ Maiden needed to distinguish the Technological Museum from both these institutions.

This left Economic botany. The natural competitor here was with the Sydney Botanic Gardens. However as a research institution under Charles Moore's Directorship, it was very specifically focused on rudimentary scientific rather than economic botany. No laboratory existed at the Sydney Botanic Gardens, so this gave Maiden the niche into which he nurtured and enhanced his botanical skills. While there was some overlap with the Sydney Botanic Gardens, he was able to provide a complimentary body of research, rather than a competitive one. Economic botany was the field that Maiden embraced and championed for the rest of his career. Maiden focused the laboratory work on botany, with a particular interest in the chemical components – Kino, resins and tannin – that were available in indigenous plants. He was in the business of providing hard facts that could be in turn be used to the benefit of local economies.

One of the subjects of inquiry in the laboratory was a chemical analysis of the bark of wattle, *Acacia sp.* Maiden knew, through the results of the Wattle Board Inquiry of Victoria that

⁵¹ Sally Gregory Kohlstedt, "Australian Museums of Natural History: Public Priorities and Scientific Initiatives in the 19th Century," *Historical Records of Australian Science* 5, no. 4 (1983).

acacias were indigenous plants with the potential to seed an export industry.⁵² His experiments in this area included creating tanning solutions, testing chemical additives and formulating tanning densities in percentage forms that added chemical certainty to speculation about tannin content of wattles.⁵³ He then compared his data across the species and ascertained that the best of the wattle tannins could be found in *Acacia pycnantha* and *Acacia decurrens*.⁵⁴ In 1890 he published the first of three editions of *Wattles and Wattlebarks*⁵⁵ and distributed them across the colony.⁵⁶ Maiden also worked on the indigenous *Eucalyptus*, *Angophora*, *Casuarinas*, *Banksias* and *Ceratopetalum* species.⁵⁷

Within their charter, the Technological Museum had a responsibility to inform and educate the general public.⁵⁸ While one aspect of this was the display of collections, Maiden also nurtured a public lecture series to fulfil these aims. Philip Candy argues in relation to Mechanics institutes that the public lecture 'served as a major vehicle for enlightenment and entertainment.'⁵⁹ Over his career he lectured on many varied topics, illustrating with lantern slides where he could as he spoke to working men's groups, technical guilds and other interested parties. In 1884 he undertook a lecture program delivered on the museum premises each Wednesday afternoon at 4.15pm. Each lecture used a selection of museum objects to

⁵² E J Dixon et al., "Report of the Wattle Bark Board of Inquiry Together with a Statement Showing the Profit to Be Derived from the Systematic Cultivation of Wattles," (Melbourne: Wattle Board of Inquiry, Victoria, 1878).

⁵³ Joseph Maiden, Laboratory Notebook, 1887, Powerhouse Museum Archive (Sydney) MRS 256.

⁵⁴ ———, *Wattles and Wattle-Barks, Being Hints on the Conservation and Cultivation of Wattles Together with Particulars of Their Value*, 1st ed. (Sydney: Department of Public Instruction, 1890).

⁵⁵ ———, *Wattles and Wattle-Barks, Being Hints on the Conservation and Cultivation of Wattles Together with Particulars of Their Value*, 2nd ed. (Sydney: Department of Public Instruction, 1891), Joseph Maiden, *Wattles and Wattle-Barks, Being Hints on the Conservation and Cultivation of Wattles Together with Particulars of Their Value*, 3rd ed. (Sydney: Department of Public Instruction, 1906).

⁵⁶ Joseph Maiden, Record of Free Publication, 1890-3, Powerhouse Museum Archive (Sydney), MRS 44-77.

⁵⁷ Gilbert, *The Little Giant: The Life and Work of Joseph Henry Maiden 1859-1925*, 82.

⁵⁸ Peter Proudfoot, Roslyn Maguire, and Robert Freestone, eds., *Colonial City, Global City: Sydney's International Exhibition 1879* (Sydney: Crossing Press, 2000).

⁵⁹ Philip Candy, "The Light of the Heaven Itself: The Contribution of the Institutes to Australia's Cultural History," in *Pioneering Culture: Mechanics' Institutes and Schools of Art in Australia*, ed. Philip C. Candy and John Laurent (Adelaide: Auslib Press, 1994).

demonstrate the economic potential of a range of categories. The lectures ranged across the three broad themes of botany, geology and zoology.⁶⁰ In other contexts he talked about his travels into the bush and at other times he provided the latest in classification data for his audience. Over the decades he continued to give public lectures, articulating this as a key duty of his various positions. He spoke of the benefits of Empire⁶¹ and plant foods for Aborigines to the young women of Sydney Girls' High School.⁶² During his time at the Technological Museum he developed a diverse repertoire of lecture subjects while at the same time watering and tending a public profile as a man of useful science.

One turning point for Maiden in his time at the Technological Museum was the publication of his book *The Useful Native Plants of Australia* in 1889. In it, Maiden discerns ten categories of usefulness: Human Food and Food Adjuncts; Forage Plants; Drugs; Gums, Resins and Kinos; Oils, Perfumes; Dyes; Tans; Timbers and Fibres. He delimited this study by stating that it would 'include all Australian plants which up to the present are known to be of economic value, or injurious to man and domestic animals.' (sic)⁶³ The purpose of this book was to promote both the knowledge and the plants in terms of their use to the settlement of Australia. In each case it was a matter of considering an Australian plant in terms of how it might fit to colonial life.⁶⁴ His eclectic lists include the use of eucalyptus for wood paving and use as a febrifuge; wattle for its tannin qualities in the leather industry and native laurel for its sweet smell. While in one way this book was a culmination of the Maiden's work at the Technological Museum, it should also be considered as an important foundation of the

⁶⁰ Gilbert, *The Little Giant: The Life and Work of Joseph Henry Maiden 1859-1925*.

⁶¹ Joseph Maiden, "Acacia Burkittii, F.V.M. Burkitt's Wattle," in *The Forest Flora of New South Wales* (Sydney: William Applegate Gullick, 1911).

⁶² ———, "Some Plant-Foods of the Aborigines," *Agricultural Gazette of New South Wales* 9, no. 4 (1899).

⁶³ ———, *The Useful Native Plants of Australia (Including Tasmania)* (London: Trubner and Co. Ludgate Hill, 1889), ix.

⁶⁴ *Ibid.*

work at the Sydney Botanic Gardens. His research into usefulness of this group of plants consolidated his approach to mobilising botanical knowledges.

In his role as a curator, Maiden built a professional profile as a botanist, through a practical application of scientific practices and publishing widely and often, in both the popular and scientific press.⁶⁵ The years at the Technological Museum, fourteen in all, saw Maiden securely developing a range of work practices, many of which transferred with him when the time came for him to take up his position at the Botanic Gardens. He developed a didactic approach to the museum displays whilst encouraging and supporting research work that centered on the collections under his care. The guidelines developed by the board, through comparison to other ostensibly English Museums, focused on the importance of economically useful items and materials.⁶⁶ In addition to the practices that he developed within the institution, he was also influenced by broader cultural discourses circulating in Sydney at the time.

Professional circles and circulating discourses

As Maiden's position was secured after his arrival in Sydney, he was provided with a platform for movement into the learned societies that were active in Sydney at that time. The first membership that he took up, and maintained throughout his life was with the Royal Society of New South Wales in 1883.⁶⁷ Gilbert lists his first publication in the proceedings of

⁶⁵Gilbert, *The Royal Botanic Gardens, Sydney: A History 1816-1985*, Gilbert, "From Joseph Banks to Joseph Maiden: Towards a Scientific Botanic Garden.", Gilbert, *The Little Giant: The Life and Work of Joseph Henry Maiden 1859-1925*, "Character Sketch - Joseph Henry Maiden F.L.S.," *Public Service Journal* (1901): 6.

⁶⁶ Liversidge, "Report Upon Technological Museums and Scientific and Technical Instruction and Evening Classes."

⁶⁷ Royal Society of New South Wales lists members in the frontispiece of all volumes.

a learned society as 'Descriptions of some sixteenth century maps of Australia,' read before the Royal Geographical Society of Australia in 1886.⁶⁸ From this time on, he actively contributed to conversations, meetings, correspondence and publications in a broad range of learned societies.⁶⁹ Lucille Brockway argues that men 'joined together in learned societies for their mutual instruction, polite entertainment and prestigious social intercourse.'⁷⁰ Membership had a political function in being a marker of like minded thinkers in the science of botany.⁷¹ This placed them within the networks of influence within this colonial space. It was also a forum largely dominated by white men. It gave them access to other members, whose locations were wide and varied.

In Lieutenant Colonel Gage's 1938 history of the Linnaean society, he argued that the direct interface between members acted as reinforcement to other textual methods of communicating scientific matters.⁷² In Australia, Maiden relied upon active corresponding relations with many different societies. On the professional front, Maiden was a member of the Local and British chapters of the Linnaean society, the Royal Society and the Australasian Association for the Advancement of Science. Other societies overlapped with more specific interests such as acclimatisation, forestry and agriculture. Such memberships

⁶⁸ Gilbert, *The Little Giant: The Life and Work of Joseph Henry Maiden 1859-1925*, 336.

⁶⁹ This list of societies was published in the Royal Society of New South Wales following Maiden's notation as a member: Hon Fellow Royal Society of South Australia; Hon Fellow Royal Society of Western Australia; Netherlands Society for the Promotion of Industry; Philadelphia College of Pharmacy; Southern Californian Academy of Sciences; Pharmaceutical Society of New South Wales; British Pharmaceutical Conference; Corresponding Fellow Therapeutical Society of London; Corresponding Member of Pharmaceutical Society Great Britain; Botanical Society of Edinburgh; Society National de Agricultura (Chile); Society d'Horticulture d'Alger; Union Agricole Calédonienne; Society Nat. de Chérbourg; Royal Society of Tasmania; Royal Society of Queensland; Institute National Génévois; Hon Vice-President of the Forestry Society of California; Diplômé of the Société Nationale d'Acclimatation de France; Linnean Medalist, Linnean Society; New South Wales Representative of the 'Commission Consultation pour la Protection International de la Nature'; Corresponding Member National Acclimatation Society of France.

⁷⁰ Brockway, *Science and Colonial Expansion: The Role of British Royal Botanic Gardens*, 63.

⁷¹ A M Lucas, "Baron Von Mueller: Protege Turned Patron," in *Australian Science in the Making*, ed. K.W. Home (Cambridge: Cambridge University Press, 1988), 143-47.

⁷² Brockway, *Science and Colonial Expansion: The Role of British Royal Botanic Gardens*, 66.

gave him the opportunity to engage in research across a range of disciplines from his perspective as a botanist. Other members of the Royal society, in particular, included key University staff, the local medical fraternity, clerics as well as geologists and surveyors.⁷³ The sociability of such networks operated across professional and national boundaries creating links associated with a broad view of useful colonial science.

As an active member of the Royal Society of New South Wales he held the post of President in 1896 and 1911, but it was the role of Honorary Secretary between 1894 and 1918 that provided a position of sustained input into this intellectual field.⁷⁴ He variously shared this role with Professor of Geology T Edgeworth David,⁷⁵ J W Grimshaw, Commonwealth statistician George Knibbs,⁷⁶ agricultural chemist F B Guthrie,⁷⁷ Professor Pollack and fellow botanist R H Cambage.⁷⁸ An important part of this role was the editorship of the *Journal and Proceedings of the Royal Society of New South Wales*. This role also afforded Maiden the scrutiny of scholarship submitted for publication. The journals and proceedings of this learned society was a site where Maiden was presented with anthropological knowledge about indigenous people and their plants in Australia.

⁷³ The journal of the Royal Society carried extensive lists of members, their occupations, their memberships in other learned societies indicating the types of men involved in this enterprise.

⁷⁴ He was President of the society in 1896 and 1911 and Vice President in 1915. In these years he was not the Honorary Secretary or editor of the Journal.

⁷⁵ T G Vallance, D F Branagan, 'David, Sir Tannatt William Edgeworth (1858 - 1934)', *Australian Dictionary of Biography*, Volume 8, Melbourne University Press, 1981, 218-221

⁷⁶ Susan Bambrick, 'Knibbs, Sir George Handley (1858 - 1929)', *Australian Dictionary of Biography*, Volume 9, Melbourne University Press, 1983, 620-621.

⁷⁷ C W Wrigley, 'Guthrie, Frederick Bickell (1861 - 1927)', *Australian Dictionary of Biography*, Volume 9, Melbourne University Press, 1983, 143-144.

⁷⁸ W G. McMinn, 'Cambage, Richard Hind (1859 - 1928)', *Australian Dictionary of Biography*, Volume 7, Melbourne University Press, 1979, 529-530.

Topics for the journal were as wide and varied as the membership itself. Most societies and their journals had very specific content, for example, the Linnaean Society of New South Wales was exclusively dedicated to botany. In contrast the Royal Society drew from a range of disciplines, including geology, hydrology, aviation, botany, biology and chemistry. This journal published many of the texts that represent the theories and ethnological field work undertaken in New South Wales at this time. Articles authored by R H Mathews feature prominently during the years of Maiden's editorship.⁷⁹ Mathews was keenly interested in recording a range of aspects of indigenous life, and a number of these publications concern

⁷⁹ R H Mathews, "Aboriginal Bora Held at Gundabloui in 1894," *Journal and Proceedings of the Royal Society of New South Wales* 28 (1894), Archibald Liversidge, "Notes on Some Australasian and Other Stone Implements," *Journal and Proceedings of the Royal Society of New South Wales* 28 (1894), R H Mathews, "Some Stone Implements Used by the Aborigines of New South Wales," *Journal and Proceedings of the Royal Society of New South Wales* 28 (1894), T P Anderson Stuart, "The 'Mika' or 'Kulpi' Operation of the Australian Aborigines," *Journal and Proceedings of the Royal Society of New South Wales* 30 (1896), R H Mathews, "Additional Remarks Concerning Aboriginal Bora Held at Gundabloui in 1894," *Journal and Proceedings of the Royal Society of New South Wales* 30 (1896), R H Mathews, "The Burbung, or Initiation Ceremonies of the Murrumbidgee Tribes," *Journal and Proceedings of the Royal Society of New South Wales* 31 (1897), T L Bancroft, "Note on Mutilations Practised by Australian Aborigines," *Journal and Proceedings of the Royal Society of New South Wales* 31 (1897), Mr Larmer, "Native Vocabulary of Miscellaneous New South Wales Objects," *Journal and Proceedings of the Royal Society of New South Wales* 32 (1898), R H Mathews, "The Group Divisions and Initiation Ceremonies of the Barkunjee Tribe," *Journal and Proceedings of the Royal Society of New South Wales* 32 (1898), R H Mathews, "Divisions of Some Aboriginal Tribes, Queensland," *Journal and Proceedings of the Royal Society of New South Wales* 33 (1899), W J Enright, "The Initiation Ceremonies of the Aborigines of Port Stephens," *Journal and Proceedings of the Royal Society of New South Wales* 33 (1899), R H Mathews, "Marriage and Descent among the Australian Aborigines," *Journal and Proceedings of the Royal Society of New South Wales* 34 (1900), R H Mathews, "The Thurrawal Language," *Journal and Proceedings of the Royal Society of New South Wales* 35 (1901), R H Mathews, "Language of the Bungandity Tribe, Aouth Australia," *Journal and Proceedings of the Royal Society of New South Wales* 37 (1903), R H Mathews, "The Aboriginal Fisheries at Brewarrina," *Journal and Proceedings of the Royal Society of New South Wales* 37 (1903), R H Mathews, "Notes on Some Native Dialects of Victoria," *Journal and Proceedings of the Royal Society of New South Wales* 37 (1903), R H Mathews, "Ethnological Notes on the Aboriginal Tribes of New South Wales and Victoria," *Journal and Proceedings of the Royal Society of New South Wales* 38 (1904), R H Mathews, "Sociology of Some Australian Tribes," *Journal and Proceedings of the Royal Society of New South Wales* 39 (1905), R H Mathews, "Notes on Some Native Tribes of Australia," *Journal and Proceedings of the Royal Society of New South Wales* 40 (1906), R H Mathews, "Notes on Some Aboriginal Tribes," *Journal and Proceedings of the Royal Society of New South Wales* 41 (1907), R H Mathews, "Aboriginal Navigation and Other Notes," *Journal and Proceedings of the Royal Society of New South Wales* 41 (1907), R H Mathews, "Vocabulary of the Ngarrugu Tribe, New South Wales," *Journal and Proceedings of the Royal Society of New South Wales* 42 (1908), R H Mathews, "Some Curious Stones Used by the Aborigines," *Journal and Proceedings of the Royal Society of New South Wales* 45 (1911), R H Mathews, "Description of Two Boras of the Kamilaroi Tribe," *Journal and Proceedings of the Royal Society of New South Wales* 51 (1917).

language and vocabulary.⁸⁰ This was the dynamic that indigenous scholars now refer to as speaking about indigeneity and not to indigenous people.⁸¹

Martin Thomas disputes this idea, arguing instead that although Mathews work was written for an anthropological audience, his relations with indigenous groups was intimate and respectful.⁸² He also argues that Mathews' project sought a comparative mapping of the lexicon of different indigenous languages, as his sense was this was the only way that it could be reasonably and rationally understood.⁸³ Mathews was never attempting to capture all aspects of indigenous language, but instead sampled a set of words to demonstrate difference between groups of speakers. Doubtless, Thomas is correct in his assessment of Mathews' body of work. The problem arose in the inevitable fragmentation of this body of work into scattered journal articles. In addition to publishing in a spectrum of journals, this scattering was compounded by the multiple languages in which he published, namely, English, German and French. No single volume was ever achieved by Mathews. In this way the texts took on a life of their own and could appear, not as a layered lexicon, but to readers such as Maiden as static representations of words without voices.

Thomas does acknowledge that even though Mathews spurned evolutionary theory, he still believed that indigenous culture would die out. This way of knowing was already an

⁸⁰ R H Mathews et al., *Culture in Translation: The Anthropological Legacy of R.H. Mathews* (Canberra: ANU E Press and Aboriginal History Inc., 2007).

⁸¹ See for example Martin N Nakata, "Anthropological Texts and Indigenous Standpoints," *Australian Aboriginal Studies* 2 (1998), Lynette Russell, "Indigenous Knowledge and Archives: Accessing Hidden History and Understandings," in *Australian Indigenous Knowledge and Libraries*, ed. Martin N Nakata and Marcia Langton (Canberra: Australian Academic & Research Libraries, 2005), Tony Birch, "I Could Feel It in My Body: War on a History War," *Transforming Cultures eJournal* 1, no. 1 (2006).

⁸² Mathews et al., *Culture in Translation: The Anthropological Legacy of R.H. Mathews*.

⁸³ Martin Thomas, "Word Territory: Recording Aboriginal Languages with R.H. Mathews," *History Australia* 5, no. 2 (2008).

expression of colonial power, before it came to the editorial attention of Maiden and the other Honorary Secretaries. This was nowhere more obvious than in Maiden's repetition of the notion that indigenous people were dying out. Telling was Maiden's justification for his didactic article for New South Wales children about the 'plant-foods of the Aborigines' published in 1898. It commences by rousing interest in the curiosity of the hunting and gathering life that was dependent upon understanding the edible quality of some plants. This was quickly followed by a doubled justification as to why so little was actually understood about this process.

At the present day it is impossible to say, with absolute certainty, whether the roots and fruits of certain plants were eaten by the blacks or not, partly because the race is so fast dying out and partly because systematic botanical records of these lesser known vegetable foods have only been made only during recent years.⁸⁴

These botanical knowledges were framed as unavailable to children unless they were initially accessed and authenticated by a scientist. The keepers of these botanical knowledges, indigenous people, were doomed.⁸⁵

Maiden operated within this intellectual milieu. Patrick Brantlinger argues that it was 'the anthropologists' scientific views that informed white Australian discourse and policy toward the Aborigines' (sic) from the late nineteenth century 'down to at least the 1960s.'⁸⁶ It was the idea of extinction, Russell McGregor argues, which prevailed by the late nineteenth

⁸⁴ Maiden, "Some Plant-Foods of the Aborigines," 349.

⁸⁵ See Colin Martin Tatz, "Australia: Defining and Interpreting Genocide," in *With Intent to Destroy: Reflecting on Genocide* (London; New York, N.Y.: VERSO, 2003). Brantlinger considers 'extinction' in a range of places: America, Ireland, Australia and New Zealand, demonstrating that this was a transnational discourse, with local effects. See also Russell McGregor, *Imagined Destinies: Aboriginal Australians and the Doomed Race Theory, 1880-1939* (Carlton, Vic.: Melbourne University Press, 1997), 39. Tatz writes about the avoidance by historians in dealing with the dispossession as genocide.

⁸⁶ Patrick Brantlinger, *Dark Vanishings: Discourse on the Extinction of Primitive Races, 1800-1930* (Ithaca, N.Y.; London: Cornell University Press, 2003), 139.

century and was used to flag the urgency of research into indigenous life in Australia. Maiden's adherence to the doomed race theory was further evidenced by his first report to the government after he became Director.

Much pruning and thinning-out has been necessary to keep trees in shape and out of harm's way, while a quantity of dead wood has been removed from old-gum trees to preserve their green and healthy appearance as much as possible. Nevertheless, the day is approaching more rapidly than I like, when the self-planted indigenous trees in the Domain will be a thing of the past. Like our Aborigines, they pass away with the development of the improvements of civilized men.⁸⁷

In *Imagined Destinies* McGregor outlines the scientific scholarship that constructed the doomed race theory⁸⁸ weaving this history through the works of prominent evolutionary biologists and scientists such as Stocking, Darwin, Wallace, Lubbock, Huxley, Morgan and Spencer. Anthropology, a blossoming discipline in the late nineteenth century, became the mainstay of academic work that sort to capture the primitivity of Indigenous peoples. McGregor explains:

Locked into an evolutionary paradigm, anthropology did not seek to investigate whether Aborigines were primeval forms of humanity. That was taken for granted. Rather, it sought to discover what the primeval forms of human society, customs, beliefs, mentality and physique really were.⁸⁹

Scientist after scientist discussed by McGregor was affected by a positionality that didn't simply guide the research that they did, but equally skewed any research results that emerged in this period. A scientist who recognised the validity of evolutionary theory entered the

⁸⁷ Joseph Maiden, "Report on Botanic Gardens and Domian, &C. For the Year 1898," (Sydney: Botanic Gardens, Sydney, 1899), 23.

⁸⁸ See also Brantlinger, *Dark Vanishings: Discourse on the Extinction of Primitive Races, 1800-1930*.

⁸⁹ McGregor, *Imagined Destinies: Aboriginal Australians and the Doomed Race Theory, 1880-1939*, 39.

research field and was bound to find primitivity – to find scaled humanness – to be blinkered to the ways of thinking about Indigenous people in this particular way.

The interconnected cultural discourse that operated as a counterpoint to that of dying out indigenous society was whiteness. As a consequence of colonisation, each was formed in relation to the other.⁹⁰ Marilyn Lake and Henry Reynolds argue that Australia was one of a number of nations whose democracy and indeed internal culture were self-consciously shaped as ‘white men’s countries.’ For Lake the important feature of the discourse of whiteness was the manner in which it informed and shaped democracy in the settler colonies. She cites the introduction of the White Australia policy as just one aspect of the fashioning of Australia as a white man’s country. She argues that such manifestations were a part of a transnationalised inter-relations where the cross currents of ideas and ideology of the white man formed in relation to the specificity of settler colonialism, rather than as an inherent positioning as part of the British Empire.⁹¹ The formulation of this concept was based upon the transnational connections between South Africa, Australia and the United States. Each of these nations and the states within them, such as Natal or Mississippi or New South Wales swapped, debated, corresponded and compounded each others’ whiteness, defining its legislative and governmental aspects in relation to these other national circumstances.

What Lake and Reynolds provided was the political circumstance in which Maiden lived and worked, where his whiteness was reiterated and reified in each and every aspect of his life.

⁹⁰ See Anne McClintock, *Imperial Leather: Race, Gender, and Sexuality in the Colonial Contest* (New York: Routledge, 1995), Frantz Fanon, *Black Skin, White Masks* (New York,; Grove Press, 1967), Frantz Fanon, *The Wretched of the Earth* (New York: Grove Press, 1968), Edward Said, *Orientalism* (London: Routledge and Kegan Paul, 1978), Edward Said, *Culture and Imperialism* (London: Vintage, 1993).

⁹¹ Marilyn Lake and Henry Reynolds, *Drawing the Global Colour Line: White Men’s Countries and the Question of Racial Inequality* (Melbourne: Melbourne University Press, 2008).

The discursive category of white man was highly visible in the period through which Maiden lived.⁹² Lake argues that this contradicts the invisibility thesis put forward in contemporary scholarship on whiteness. Lake misses the point however, made by American and Australian scholarship on whiteness that power was made invisible as it was assumed within the positions of those who were able to operationalise it.⁹³ Where political rhetoric was replete with references to the white man, one was less likely to find Maiden making an explicit reference to his own whiteness.⁹⁴ This does not mean that the privileges inherent in this racial positioning were unavailable to him, but he was far more likely to make statements and to intervene into indigenous ways of knowing plants and environments based on othering.⁹⁵

Maiden was enmeshed within this system and acted upon the prevailing scientific, cultural and political discourses of this period. As Donna Haraway argues 'knowledge is embedded in projects; knowledge is always *for*, in many senses, some things and not others, and knowers are always formed by their projects, just as they shape what they can know.'⁹⁶ When Maiden approached Australian land and its flora, he did so as a participant in the creation and use of transnational botanical knowledges that approached indigenous knowledge in a partial way.

Postcolonial theorist Franz Fanon argues that attitudes toward land and indigenous presence

⁹² Ibid.

⁹³ Chilla Bulbeck, *Re-Orienting Western Feminisms: Women's Diversity in a Postcolonial World* (Cambridge; New York: Cambridge University Press, 1998), 218. See also Richard Dyer, *White* (London; New York: Routledge, 1997), Aileen Moreton-Robinson, "Unmasking Whiteness: A Goori Jondal's Look at Some Duggai Business," in *Unmasking Whiteness: Race Relations and Reconciliation*, ed. Belinda McKay (Brisbane: Queensland Studies Centre Griffith University, 1999), Aileen Moreton-Robinson, *Talkin' up to the White Woman: Aboriginal Women and Feminism* (St Lucia, Qld.: University of Queensland Press, 2000), Ruth Frankenberg, *White Women, Race Matters: The Social Construction of Whiteness* (Minneapolis: University of Minnesota Press & Routledge, 1993), Toni Morrison, *Playing in the Dark: Whiteness and the Literary Imagination* (Cambridge, Mass.: Harvard University Press, 1992).

⁹⁴ Andrew Markus, "Of Continuities and Discontinuities: Reflections on a Century of Australian Immigration Control," in *Legacies of White Australia: Race, Culture and Nation*, ed. Laksiri Jayasuriya, David Walker, and Jan Gothard (Perth: University of Western Australia Press, 2003), 177.

⁹⁵ Peggy McIntosh, "White Privilege and Male Privilege: A Personal Account of Coming to See Correspondences through Work in Women's Studies (1988)," in *Race Class and Gender: An Anthology*, ed. Margaret Anderson and Patricia Hill Collins (Belmont: Wadsworth Thomson Learning, 2001).

⁹⁶ Donna Haraway, "Morphing in the Order: Flexible Strategies, Feminist Science Studies and Primate Revisions," in *The Haraway Reader* (New York: Routledge, 2004), 200.

are inextricably intertwined. Conquering and taming land – settling – meant ‘the railways across the bush, the draining of swamps, and a native population which is non-existent politically and economically are in fact one and the same.’⁹⁷ While Maiden did not build railways or drain swamps, his work with botanical knowledges and the attendant practices were always bound into the process of settling through the claim of usefulness. Maiden’s understandings of economic botany were built throughout his career and were enmeshed into his approach to supporting settlement.

These were research practices that were culturally embedded⁹⁸ in scientific approaches to people and land. This was especially so for those whose contact with tribes, peoples, and individuals was personal: anthropologists,⁹⁹ linguists¹⁰⁰ and evolutionary biologists.¹⁰¹ One of the familiar features of the experience of whiteness, according to Ruth Frankenberg, was that it created a ‘social distance from people of colour despite their physical presence.’¹⁰² As we will see in the following chapters, Maiden worked within *country*, constantly at a distance from Indigenous people, proximate, instead, to the transnational scientific community.

He carried these personal attributes, work practices and cultural discourses with him when he moved to the Sydney Botanic Gardens in 1896. At this institution, Maiden took charge of a park complex as well as the collections of plants, plant material and plant information. In

⁹⁷ Franz Fanon cited in Rodney James Giblett, *Postmodern Wetlands: Culture, History, Ecology*, Postmodern Theory. (Edinburgh: Edinburgh University Press, 1996), 74.

⁹⁸ Martin Nakata explores this in relation to the work of Cambridge Linguist Sidney Ray and the people of the Torres Strait Islands. Martin N. Nakata, *Disciplining the Savages: Savaging the Disciplines* (Canberra: Aboriginal Studies Press, 2007), 15-32.

⁹⁹ Elizabeth A. Povinelli, *The Cunning of Recognition: Indigenous Alterities and the Making of Australian Multiculturalism*, Politics, History and Culture. (Durham: Duke University Press, 2002).

¹⁰⁰ Thomas, "Word Territory: Recording Aboriginal Languages with R.H. Mathews."

¹⁰¹ McGregor, *Imagined Destinies: Aboriginal Australians and the Doomed Race Theory, 1880-1939*.

¹⁰² Frankenberg, *White Women, Race Matters: The Social Construction of Whiteness*, 166.

addition to the Botanic Gardens he also managed the Government Domains, Garden Palace Grounds, Centennial Park and the State Nursery, Campbelltown. The Sydney Botanic Gardens also managed the gardens of Hill View, the residence of the Governor in the Southern Highlands; Wotonga, Admiralty House and the Gaol Reserves at Maitland.¹⁰³ From 1896 he had a range of horticultural, botanical and administrative staff to manage. This position gave him contact and communications, with politicians and senior bureaucrats at both local, colonial/state and later national level.

In the Sydney Botanic Gardens Collections

Maiden took up the post of Director of the Sydney Botanic Gardens in June 1896. His predecessor Charles Moore had been at the helm for forty-eight years. Although relatively little is known about Moore's time at the institution, it already had a functioning interrelated set of collections. Maiden did not come to this institution cold, as he had at the Technological Museum; instead he began his tenure at an institution with all the fundamental collections already formed. The library, botanic museum and living collection were all relatively well developed. Moore saw little value however in keeping a large herbarium. In Maiden's initial survey of the collections he was surprised to find that Moore only held approximately 1000 herbarium sheets, all of which were indigenous flora. Exotic floras were not represented at all. Building up the collections such that they could be useful to settlement was the imperative of Maiden's first years at the Sydney Botanic Gardens.

¹⁰³ Joseph Maiden, "Report on Botanic Gardens and Domains, &C. For the Year 1897," (Sydney: Botanic Gardens, Sydney, 1898).

Given the paucity of specimens held in the herbarium, the cheapest and most readily available way to accumulate matter from the Australian environment was to mount botanical collecting trips to sample Australian flora from a range of places. This was a cost effective way of maintaining the best specimens for the Sydney Botanic Gardens. Collecting trips also provided the raw material that was exchanged. Over the course of his career the official trips covered the area from the coastal regions from the Queensland to Victorian borders. Collecting swept inland through the Southern Highlands and along to the alpine region. Maiden also collected in other parts of Australia, particularly in South Australia, Victoria and Western Australia. The Sydney Botanic Gardens bartered the seeds and plant material and the scientific research drawn from these collecting trips in exchange for botanical knowledges from other parts of the world.

From this collecting activity, specified material from a particular plant was taken and dried on specialised sheets. The leaf, flower and seeds were pressed over a period of time until the moisture was removed and a representation of the plant was created. When seeds and fruit were too large or bulky to be effectively dried they were collected in bottles and suspended in alcohol. The botanist then added other information pertinent to the specimen. The places of collection, the date, the taxonomic classification were all provided in labels.¹⁰⁴ This herbarium sheet for the botanist was intended to provide an ‘unchanging record or evidence by means of which other plants, living or dead may be compared and verified.’¹⁰⁵ These sheets were reference points for the classification and the mapping of geographic distribution of Australian flora. By 1904, after a number of years of intensively collecting Australian

¹⁰⁴ L H Bailey, *How Plants Got Their Names* (New York: The Macmillan Company, 1933), 52-65.

¹⁰⁵ *Ibid.*, 46.

material, Maiden was to boast that the National Herbarium of New South Wales¹⁰⁶ contained representatives of 97% of the named species of the state.¹⁰⁷

However, the sheets also had another function. They made plants travel as information. These enabled transportation of botanical knowledge from one part of the globe to another. The herbarium sheet allowed botanists in Europe to process information about Australia in other parts of the globe.¹⁰⁸ This was not a new technology but a botanical method that had been in use for centuries.¹⁰⁹ It was herbarium specimens combined with other information that Carolus Linneaus used to classify the plants in his *Species Plantarum*. Herbaria, both institutional and private, performed the same function as a library, providing reference material for the botanist. Michel Foucault argued that the presentation of herbarium specimens brought 'language as close as possible to the observing gaze, and the things observed as close as possible to words.'¹¹⁰ The act of providing a systematic form of information on herbarium sheets meant that regardless of the place where a sheet may travel to, it could be read. The sparse additional information helped to minimise problems of translation. This made herbarium specimens the perfect transnational communication device. They belonged not to any nation, but to a community of scientists united through a global sense of the environment and the need to construct ways to understand it. When Maiden took up the post of Director, the Sydney Botanic Gardens had less than 1000 herbarium sheets. Upon his death the curator of the herbarium, Edwin Cheel counted 18,000 boxes containing

¹⁰⁶ This is the full name of the herbarium within the Sydney Botanic Gardens.

¹⁰⁷ Joseph Maiden, "Report on Botanic Gardens and Domains for the Year 1903," (Sydney: Legislative Assembly New South Wales, 1905), 6.

¹⁰⁸ F R Fosberg, "The Herbarium," *The Scientific Monthly* LXIII (1946).

¹⁰⁹ William Roscoe, "On Artificial and Natural Arrangements of Plants: And Particularly on the Systems of Linnaeus and Jussieu," *Transactions of the Linnean Society of London* 11 (1810), D. Onno Wijands and Johannes Heniger, "The Origins of Clifford's Herbarium," *Botanical Journal of the Linnean Society* 106, no. 2 (1991).

¹¹⁰ Michel Foucault, "Representing," in *The Order of Things: An Archaeology of the Human Sciences* (New York: 1994), 132.

approximately 340,000 individual sheets. A H S Lucas suggests that 'probably Maiden's creation of this great Herbarium is his finest contribution to science.' (sic) ¹¹¹

Herbarium sheets were exchanged across borders ¹¹² and collections were often put up for sale.¹¹³ In this way the process of information exchange occurred across borders and boundaries, the lynchpin of which was mobility.¹¹⁴ Collected together into a centralised repository, the botany of one colonised territory could be juxtaposed with another. Then the collaboration that was enacted through exchange meant that knowledge moved with the specimens. LH Bailey's argument that a specimen can be read 'equally in the height of summer or the deeps of winter' can be extended to the understanding that a specimen sheet could be read in any place it was located regardless of the formal language of the reader.¹¹⁵ Tom Griffiths argues that the 'urge to classify and order the world of nature went hand in hand with the domination of far-flung human societies' but also distant environments.¹¹⁶ This was a process of colonising and settling the environment, as much as an endeavour for enlightenment knowledge.¹¹⁷ The herbarium sheets were both colonisers, in the sense that they mapped Australia for a non-indigenous community, and a transnational instrument, able to be sent out to multiple locations across the world.

¹¹¹ Lucas, "Joseph Henry Maiden 1859-1925 (Memorial Series No.3)," 359.

¹¹² "Plants for Sale," *Hooker's Journal of Botany and Kew Garden Miscellany* 3 (1851).

¹¹³ Jim Endersby, "A Garden Enclosed: Botanical Barter in Sydney, 1818-39," *British Journal for the History of Science* 33, no. 18 (2000). Endersby makes the argument that seeds of Australian plants were collected and exchanged in a barter system which operated on the basis of their value within networks of botanical collectors. Seeds and dried specimens were part of the same transfer across borders.

¹¹⁴ Bailey, *How Plants Got Their Names*, 46-65.

¹¹⁵ *Ibid.*, 25.

¹¹⁶ Griffiths, *Hunters and Collectors: The Antiquarian Imagination in Australia*, 19.

¹¹⁷ Hwa Yol Jung, "Enlightenment and the Question of the Other: A Postmodern Audition," in *Human Studies* (Kluwer Academic Publishing, 2002).

Herbaria were not simply storehouses for dried specimens, they were also laboratories. Botanical knowledges were both accumulated and produced in the Sydney Botanic Gardens, an example of this being the botanical illustration. The illustration followed a similar pattern of representation to the herbarium specimen. Although an art form, botanical illustration developed as an important layer in the science of botany in the eighteenth century.¹¹⁸ While the herbarium specimen provided a lifeless version of the plant, the illustration used multi-dimensional representation; as technology improved over the eighteenth and nineteenth centuries it also incorporated the use of colour. In this way it supplemented the herbarium specimen in providing another layer in the information of plants. Illustration was undertaken both as field work and as part of the laboratory work and was crucial to Maiden's vision of a National Herbarium of New South Wales.

The Sydney Botanical Museum was initially set up by Charles Moore. The 1883 catalogue details the range of material on display in this educational section of the Botanic Gardens. Each item displayed was described in the catalogue for the way it was used in its country of origin. For example, Item 551, Fruits of *Barringtonia sp* from India.

The seeds of the *Barringtonia* have narcotic properties, and are used by the natives of India and the South Sea Islands to inebriate fish, in order to facilitate their capture.¹¹⁹

In this way the museum displayed the ethnographic curiosities of native cultures, but at the same time informed visitors about plant use. The use of the term native was specific to colonisation, referring to indigenous plant practices that predated invasion.

¹¹⁸ Helen Hewson, *Australia: 300 Years of Botanical Illustration* (Collingwood: CSIRO Publishing, 1999), 3-14.

¹¹⁹ Sydney Botanic Gardens, *Catalogue of the Botanical Museum*, in RBGS Library (Sydney: 1883), 32.

As such the museum displays othered the products and knowledges of indigenous people, lands and communities all over the world. The displays were suggestive of ways that Australians could adapt and translate native practices of plant use to local circumstances. This meant not just appropriating and acclimatising plants but also the indigenous knowledge pertaining to particular plants. The museum continued to display botanical material from the 1890s to 1920s. While the earlier museum, under Moore's charge, mostly inventoried exotic plants, and plant products, the new and enlarged version, with purpose built rooms and display cabinets, made a greater effort to include and explain Australian botany and its products.¹²⁰ For example, Maiden was able to add knowledge about inebriative qualities of *Acacia facata* and *Cupania pseudorhus* used by indigenous people in fishing in the Southern Highlands and the north coast districts.¹²¹

The actual gardens, the public spaces were well known within the social environment of the city. They also had the dual capacity to provide a space for living collections that supplemented the herbarium and the museum. Where the herbarium and museum accumulated specimens for reference, nothing truly represented a tree, shrub, flower or grass the way that a living plant did growing to maturity. In the garden beds of the Sydney Botanic Gardens, the scientific staff could grow Australian plants, including the sugar gums *Eucalyptus cladocalyx* of South Australia through to the rainforest figs *Ficus macrophylla* of Queensland. In addition, plants from further afield were acclimatised there, such as the grove of Chinese bamboo and the American prickly pears that were grown at Farm Cove. A scientist could then accumulate knowledge from all the reference points, herbarium for dried specimens, museum for demonstrating uses, and the gardens for living examples.

¹²⁰ Maiden, "Report on Botanic Gardens and Domains for the Year 1903," 18.

¹²¹ Joseph Maiden, "Fish-Poisons of the Australian Aborigines," *Agricultural Gazette of New South Wales* 5 (1894): 470-71.

Although large volumes of living material collected in the field were transported around the globe, before the 1830s failure rates were very high. Prior to 1838, living plants had an even lower chance of survival on journeys across vast oceans. However, at that time the Wardian case, a travelling terrarium, specifically designed for plant transfer on shipping, improved the success rates.¹²² By the 1890s this technology and the exchange patterns that it enabled were continually used by the staff of the Sydney Botanic Gardens.

The Sydney Botanic Gardens actively exchanged seeds and other living plant material with other institutions all over the world. In 1905, they received seeds from botanic gardens in Europe, Africa, Asia, Britain and Australia. Botanical institutions such as the Agricultural Experiment Station in Arizona, The Transvaal Department of Agriculture and the US Government laboratories in the Philippines all sent seeds to Sydney. In addition, numerous private individuals from India to Rhodesia mailed stock to Maiden and his staff.¹²³ Acclimatisation societies,¹²⁴ Agricultural societies¹²⁵, Nursery gardens¹²⁶ and private estates¹²⁷ also participated in this movement of living material over the nineteenth century. However, the living collections of Botanic Gardens acted as another layer in the accumulation of information, in ways that other types of gardens did not achieve. The other reason that they supplemented plant information was because these gardens were also

¹²² Donal McCracken, *Gardens of Empire: Botanical Institutions of the Victorian British Empire* (London: Leicester University Press, 1997), 92-98, Brockway, *Science and Colonial Expansion: The Role of British Royal Botanic Gardens*, 86-87.

¹²³ Maiden, "Report on Botanic Gardens and Domains for the Year 1903," 6-7.

¹²⁴ Peter Osbourne, Queensland Acclimatisation Society: Challenging the Stereotype, unpublished manuscript, in possession of the author, 2004.

¹²⁵ John Gascoigne, *The Enlightenment and the Origins of European Australia* (Cambridge UK: Cambridge University Press, 2002).

¹²⁶ Shepard & Co., Descriptive Catalogue, 1894, Ephemera on Horticulture in New South Wales, ML.; Letter from Shepard & Co, Darling Nursery to Sir William Hooker, 21 December 1861, Royal Botanic Gardens, Kew, AJCP M735: 284.

¹²⁷ J.T.S. Bird, *The Early History of Rockhampton* (Rockhampton: Morning Bulletin, 1904), 86-89.

repositories for these other types of information. So the Sydney Botanic Gardens collected living specimens, in addition to the other varieties. Where the two dimensional representations collapsed time, the living specimen gave a tactile three dimensional sense to the plants and their places of origin. In this way, exotic plants were presented within the context of local Australian seasons. This in turn allowed Maiden and his staff to test, acclimatise, botanise and cultivate plants for benefits beyond the needs of recreational visitors.

Transnational literature complemented the traffic in plant material. The library was also an archive of botanical knowledges contained in books, journals, reports and correspondence. The first documents for the library were acquired by Charles Moore in 1852, when twelve books arrived from England. The library grew steadily under Moore's Directorship, but 1896 was to mark a change in the acquisition policy and the quantity of books, journals, reports, maps and other documents held at the Sydney Botanic Gardens. The library, as a key transit centre of transnational traffic in all matters botanical, was fundamental to the institution's capacity to engage on an international level; it was also crucial in establishing knowledge and authority when dealing on an internal national level. In his first report to the New South Wales parliament in 1897, Maiden enumerated three types of acquisitions: by gift, by purchase and by exchange.

Rather than depending on a vote from parliament to build and consolidate this aspect of the institution, Maiden instead capitalised on his access to the transnational network and requested help from a range of individuals and institutions. The Royal Botanic Gardens at Kew, the Department of Agriculture in the United States of America and the Indian

Government all sent material. James Hector secured a full set of the *Transactions of the New Zealand Institute* and Baldwin Spencer managed to arrange a number of the *Proceedings of the Royal Society of Victoria* for the Sydney library.¹²⁸ This was not a matter of only acquiring new material. The library shelves were filled with both newly published contemporary texts and rare historical material. Where gaps existed in serials held by the library, copies of missing volumes made their way to the shelves through Maiden's persistent requests to benefactors across the globe. In 1898, the eighteen volumes of *The Gardeners' Chronicle* published between 1841 and 1848 arrived in Sydney. This was a research collection with contemporary and historical publications important to the development of the Sydney Botanic Gardens.

Maiden was an eclectic librarian, not restricting himself to the 'International Catalogue of Scientific Literature', acknowledging that such guidelines excluded works of economic botany, forestry and agriculture.¹²⁹ These were crucial fields because they were so important to the manner in which the institution could support settlement through the dissemination of relevant advice and information. Maiden also collected many items such as travelogues of explorers and Australiana publications, giving a national as well as international inflection to the collection of works. When the acquisition lists of books are cross-referenced with the exchanges of herbarium specimens and seed and plant transfers, Maiden's sources for material for the Sydney Botanic Gardens were drawn from the same institutions and individuals. Such traffic in plant information constantly worked in tandem with the traffic of plants and plant material.

¹²⁸ Maiden, "Report on Botanic Gardens and Domains, &C. For the Year 1897," 10.

¹²⁹ ———, "Report on Botanic Gardens and Domains for Year 1899," 17.

The mix of library, herbarium and gardens enabled the Sydney Botanic Gardens to become a 'centre of calculation'; a site which could then 'act at a distance on many other points.'¹³⁰ Following Bruno Latour, Endersby discerns three crucial elements in this process – items must be *mobile*, they must be proficiently *stable* as a part of a collection and they must be *combinable* into new narratives and discourses.¹³¹ Endersby was discussing the cycling of objects in this manner to consider the relation to the power and knowledge that allowed institutions at the centre, here Kew, to act at a distance in relation to the various colonies, such as India or Australia. However, we can see that when Maiden activated the enlargement of the overall collection, he did so by accumulating material from other places, making the Sydney Botanic Gardens a local centre of calculation. The capacities to make botanical knowledges mobile, stable and combinable within the sphere of the collection were also the factors that made environmental change possible. Plant information was mobilised and entered into the Sydney Botanic Gardens under Maiden's acquisition and collecting policies. They were then stabilised in the form of journals, magazines, books, maps, herbarium specimens, illustrations, descriptions and importantly the living trees, shrubs, herbs and flowers in the garden itself. They were then combined within new narratives that contributed to the settlement of Australian environments.

Much of the scholarship on Joseph Maiden, particularly that of Lionel Gilbert, is accounted for in terms of his individuality. Maiden himself reflected on the importance of the Director, as an individual agent, in creating the reputation and capacity of the Sydney Botanic Gardens. He said 'The influence of a garden or other institution may depend even more upon the

¹³⁰ Bruno Latour, *Science in Action: How to Follow Scientists and Engineers through Society* (Cambridge, Mass.: Harvard University Press, 1987), 222.

¹³¹ Jim Endersby, *A Garden Enclosed: Giving Order to People and Plants at the Sydney Botanic Garden 1818-1841* B A (Hons), University of New South Wales, 1997), 111.

personality of its custodian than on the quality of its contents.’¹³² Maiden was shaped though his active participation in these varied fields, all of which served to promote his individuality as a British-born, Australian national.¹³³ In addressing the young women at the Girls’ High School in 1910 he makes this point: ‘Now, I repeat, that a nation, an Empire is built up of individuals.’¹³⁴ The irony, of course, was that he knew that without a substantial and sizable collection, the Sydney Botanic Gardens would have no influence at all. Maiden was intertwined with the material culture that emerged through his scientific and museological practices. Without his command of botanical knowledges, who exactly was he? His career was fashioned as much by botanical knowledges acquired through his scientific practices and his intellectual command of these as by his own quirky personality traits.

During this period, the Sydney Botanic Gardens became a useful organisation. This was not achieved through the provision of graceful parks on the banks of Port Jackson, but instead through the growth of collections. There is no doubt that the scientific practices that Maiden developed during his early career set him up for the challenges faced in continuing the scientific aspects of the Sydney Botanic Gardens. Importantly, Maiden was able to stimulate the Sydney Botanic Garden’s usefulness by making economic botany a guiding principle. Science of a far broader nature was enacted in the various parts of the collection. Latour argues that this then created a circulatory system, predicating the growth and development of the Sydney Botanic Gardens.¹³⁵ This system comprised a constant flow of feedback and links between people, science, the public, bureaucracy, governance and cultural discourses mobilised around and through the plants themselves.

¹³² Joseph Maiden, Draft copy of the History of the Sydney Botanic Gardens, Maiden’s Centennial Manuscripts, RBGS Library Special Collections.

¹³³ Moreton-Robinson, *Talkin’ up to the White Woman: Aboriginal Women and Feminism*, 98.

¹³⁴ Maiden, “*Acacia Burkittii*, F.V.M. Burkitt’s Wattle,” 259.

¹³⁵ Latour, *Pandora’s Hope: Essays on the Reality of Science Studies*, 80-112.

Chapter Two

Collecting and Botanising Tours

Trips organised by the Sydney Botanic Gardens into the bush yielded volumes of Australian material. Much of it went into the herbarium, seeds were stored for exchange, others were grown into seedlings and some were planted into the gardens as part of the living museum of trees and plants. From Biripi lands, Mt Seaview in the Upper Hastings river catchment, Native Cherry *Exocarpus cupressiformis* and Black Apple *Cargilla australis* and *Phyllanthus Ferdinandi* was collected. From Ngarigo lands, Mt Kosciuszko they collected white fruit cheery-tree *Exocarpus stricta* and small native raspberry *Rubus parvifolius*. These artefacts became the raw material where scientific work could begin the process of change needed so that plants could become useful to settlement. The herbarium of the Sydney Botanic Gardens contains the material culture of these journeys taken by various members of staff of the Sydney Botanic Gardens. Instead of tracks and vistas such as those found in the writings that Paul Carter examines in *The Road to Botany Bay*, these journeys produced seeds and leaves; living and dried specimens, as samples of all the places travelled.

The first section of this chapter provides the context for the collecting and botanising tours. It deals with the main reasons that these trips were undertaken. The second section of this chapter will examine a sample of these collecting trips led by Maiden. These trips took place

in the Dorrigo Forest Reserve (1894)¹; the north-central coast forests (1895)²; Hill Top on the southern tablelands (1896)³; Port Macquarie to Mount Seaview (1898)⁴ and two trips to Mount Kosciuszko (1898 & 1899).⁵ Maiden published accounts of these trips in the *Agricultural Gazette of New South Wales*, so in part this story was not simply of the trips, but of the representations of travelling created in the publications. One of the usual outcomes of research into botanical travelling would be the journals and notebooks that collectors filled as they worked in the field. Unfortunately none of this extraneous material is extant, only the publications remain.

The third section of the chapter considers these trips in light of a transnational indigenous critique of biopiracy. Biopiracy is the theft of indigenous knowledges, in many cases associated with the use of plants. Botanic gardens were implicated in this process when they participated in the movement of key crops, such as tea from China to India, or rubber from Brazil to Ceylon and Malaya.⁶ The collecting activity undertaken by the Sydney Botanic Gardens was a part of transnational circulation of botanical knowledges, rather than static its accumulation and display. Collecting was a starting point for this circulation helping the settlement in Australia.

¹ Joseph Maiden, "The Dorrigo Forest Reserve," *Agricultural Gazette of New South Wales* 5 (1894).

² ———, "Notes of a Trip to the North-Central Coast Forests of New South Wales," *Agricultural Gazette of New South Wales* 6, no. 583-612 (1895).

³ ———, "Concerning Hill Top," *Agricultural Gazette of New South Wales* 7, no. 5 (1896).

⁴ ———, "Mount Seaview and the Way Thither," *Agricultural Gazette of New South Wales* 9, no. 6 (1898), Joseph Maiden, "Notes of a Trip to Mount Seaview, Upper Hastings River," *Proceedings of the Linnean Society of New South Wales* 23 (1898).

⁵ Joseph Maiden, "A Contribution Towards a Flora of Mount Kosciuszko," *Agricultural Gazette of New South Wales* 9 (1898), Joseph Maiden, "A Second Contribution Towards a Flora of Mount Kosciuszko," *Agricultural Gazette of New South Wales* 10 (1899).

⁶ Brockway, *Science and Colonial Expansion: The Role of British Royal Botanic Gardens*.

Contextualising collecting

Each year the Sydney Botanic Gardens supported between five and ten collecting trips. These trips were never undertaken alone by Maiden, but variously included members of his staff and/or other interested botanists in the Sydney region. Headmaster of the Sydney Grammar School, A H S Lucas, an algae specialist, travelled with the Botanic Gardens Staff from time to time. John V de Coque, Manager of the Australian Export Timber company, jointly led, with Maiden, a collecting party to the North-Central Coast. These men were charged, by the Minister of Mines and Agriculture, with the task of inquiring into the value of spotted gum *Eucalyptus maculata*⁷ and the problem of cobra, a boring mollusc, in turpentine timber *Syncarpia laurifolia*.⁸ Other staff were also keen collectors and often accompanied Maiden on these trips. Overseer of Centennial Park William Forsyth travelled to Mt Seaview with Maiden and was the touring party photographer through the Mt Kosciuszko trip in 1899. Julius Camfield, Overseer of the Palace Gardens also was a keen traveller joining Maiden on the trip to Mt Kosciuszko.

Like many government departments the Botanic Gardens operated on a slim budget, and many of the people that travelled with Maiden into the bush held honorary posts in the herbarium beyond their paid employ. Overseer of the Centennial Parklands, William Forsyth cared for the mosses and hepatics; Edwin Cheel initially held an honorary position in charge of the lichens and then was employed firstly as a gardener and, eventually, in 1908 as a curator of those plants. Indoor propagator, Alexander Grant was charged with the care of the fungi collection. These honorary positions were not restricted to people in Maiden's employ.

⁷ Joseph Maiden, G R Conway, and J V de Coque, "Report on Spotted Gum, with Especial Reference to Its Value for Wood-Paving," *The Agricultural Gazette of New South Wales* 7 (1896).

⁸ Joseph Maiden, "No. 3: *Syncarpia Laurifolia*, Ten. The Turpentine Tree," in *The Forest Flora of New South Wales* (Sydney: William Applegate Gullick, 1904).

A H S Lucas was the curator of the algae section. In this way Maiden was assured that the bulk of material collected on trips was actually repatriated to the Sydney Botanic Gardens and not held in private collections. The prestige of contributing to a collection of national significance was offered in exchange for the time and labour involved in collecting and creating specimens.⁹

Of note here is the contemporaneous employment in 1901 of two women in the Sydney Botanic Gardens. Maiden's employed two women of note amongst his professional staff. Yet neither of these women ever accompanied the other staff on collecting trips with Maiden. Sarah Hynes joined the staff as the second botanical assistant and was primarily involved in the exotic collection. Hynes was credited for the 'valuable aid' she provided in preparing botanical work for Maiden's *Forest Flora of New South Wales*.¹⁰ In 1901 Margaret Flockton became the first botanical illustrator employed in an Australian herbarium. Flockton's illustrations flooded all of Maiden's publications and she was reputed to have been influential in much of his writing.¹¹ Her attention to detail and the scientific accuracy of her lithographic work means that these illustrations are still held in high regard in the Herbarium one hundred years later. Over 1000 illustrations were produced by Flockton during her twenty seven years on the Botanic Gardens staff. She taught Maiden's daughter Mary to paint botanical specimens eventually ensuring that Mary worked in the herbarium as a voluntary illustrator.¹²

⁹ This is similar to the honors and prestige that Mueller in Melbourne 'used' to encourage and support his collecting network see: Lucas, "Baron Von Mueller: Protege Turned Patron."

¹⁰ Joseph Maiden, *The Forest Flora of New South Wales Volume One*, 8 vols., vol. 1 (Sydney: William Applegate Gullick, 1904), preface.

¹¹ Hewson, *Australia: 300 Years of Botanical Illustration*, 158-60.

¹² Catherine Wardrop and Lesley Elkan, Margaret Flockton unpublished lecture delivered on the occasion of International Women's Day in 2003, http://www.rbg Syd.nsw.gov.au/science/Our_resources/margaret_flockton_award/Margaret_Flockton sited on 13 October 2008.

Women botanical collectors made an important contribution to the development of botanical science in Australia. Georgiana Molloy, Louisa Atkinson and Louisa Meredith all garnered reputations through collecting, mounting specimens and illustrating Australian flora.¹³ At the Sydney Botanic Gardens, Flockton collected Lichens. Additionally, Miss E Officer of Hay provided a vitally important contribution to the herbarium when she sent an 'abundance of well-collected and well-preserved specimens' from the south-west corner of the State.¹⁴ This was a geographic area that the official collecting staff had not yet covered. It was not peculiar for women to venture into the bush on camping trips or botanical expeditions. However in the official narratives of botanical collecting undertaken by the Sydney Botanic Gardens women were absent. Maiden recorded that his coterie of collectors went bush with exclusively male companionship.

Financially these trips were supported from the Government vote for the Sydney Botanic Gardens. In 1896, in his first budgetary round, Maiden started by allocating £80 for 'travelling and other expenses of collecting.'¹⁵ He increased this by 25% in 1899 to £100 per year.¹⁶ Sydney Botanic Gardens gardener, John Boorman was promoted to botanical collector in 1901, adding a further £150 per year to the expenses of collecting.¹⁷ He remained in this position until 1923. As government employees, rail carriage was provided, but other costs

¹³ Claire Hooker, *Irresistible Forces: Australian Women in Science* (Carlton, Vic.: Melbourne University Press, 2004), 9-24. See also Elizabeth Lawson and Louisa Atkinson, *The Natural Art of Louisa Atkinson* (Sydney: State Library of New South Wales Press, 1995), Jennifer Bowen, "Botany and the Bush: Georgiana Molloy and Her Passion for Flowers," in *Hindsight* (ABC Radio National, 2007), Caroline Jordan, *Picturesque Pursuits: Colonial Women Artists & the Amateur Tradition* (Carlton, Vic.: Melbourne University Publishing, 2005). Ann B. Shteir, *Cultivating Women, Cultivating Science: Flora's Daughters and Botany in England, 1760-1860* (Baltimore: Johns Hopkins University Press, 1996).

¹⁴ Joseph Maiden, "Report on Botanic Gardens and Domains for the Year 1903," (Sydney: Legislative Assembly New South Wales, 1904), 6.

¹⁵ New South Wales Government, "Estimates of Expenditure - Budget Papers," New South Wales Legislative Assembly Votes and Proceedings 2 (1895-6).

¹⁶ ———, "Estimates of Expenditure - Budget Papers," New South Wales Legislative Assembly Votes and Proceedings 2 (1899-1900).

¹⁷ Public Service Board, "Public Service List," New South Wales Public Service List (1903).

for the carriage of personnel and equipment drew on this vote. At Port Macquarie Maiden spent thirty-six hours assembling 'a suitable vehicle, horses, driver and camp-attendant.'¹⁸ Equipment such as field glasses, vasculums, blotting paper, plant presses, drawing paper, pens, notebooks were also funded through this budget. As a permanent part of the work of the institution, a stockpile and store of collecting and travelling technologies were kept for regular trips.¹⁹

Maiden moved through the different landscapes, collecting and gathering material for the herbarium, museum and gardens.²⁰ In making a case for the 'desirability of studying Eucalyptus in the bush' Maiden argued:

One's information in regard a plant is one-sided, unless one has met with it in the bush. In that way alone can we see the nature of the soil, the drainage, the aspect it prefers, and its associates; in other words, what is its status in the republic of plants in a smaller or larger district, in a state, in the very continent itself. This can only be done by travel.²¹

Such an argument counters that proposed by Paul Carter in relation to the activities of the botanist in the landscape. He suggests that they saw *only* individuals and taxonomic possibility.²² When Maiden looked at a tree in its environs, he also saw it in relation to the nation. So when he travelled he saw plants for their relation to national imperatives and goals. Maiden was operating as a type of settler-explorer; dependent on a 'continuing tension

¹⁸ Maiden, "Mount Seaview and the Way Thither," 577.

¹⁹ Requisitions regularly included these items, RBGS, Correspondence files (Herbarium), 1907-1948, SR NSW 8/262.

²⁰ Joseph Maiden, "Annual Reports on Botanic Gardens and Domains," (Sydney: Botanic Gardens, Sydney, 1898-1924).

²¹ ———, "The Desirability of Studying Eucalyptus in the Bush," in *A Critical Revision of the Genus Eucalyptus* (Sydney: Govt. Printer, 1923), 396.

²² Paul Carter, "An Outline of Names," in *The Road to Botany Bay: An Exploration of Landscape and History* (New York: Alfred A. Knopf, 1988), 1-33.

between mobility and stasis.²³ The mobility of travelling through the bush enabled the static representation of plants within taxonomic, ecological and territorial understandings of Australian indigeneity. This indigeneity was located with the plants and not with the cultures of difference of indigenous people. These plants were entangled in the nation-building process at the same time that they became transnational science.

Collecting trips were primarily about achieving three intertwined goals. Firstly they were opportunities to travel into different geographic regions of New South Wales. The Southern Highlands, the alpine region, the riverine forests and the coastal forests and the rangeland all provided the travellers with first hand knowledge of different ecosystems. This allowed Maiden to build up a picture of regional variation. The main areas not discussed in this chapter are the western region beyond the Great Dividing Range and the ecosystems particular to the Riverina and slopes of the alpine region. While at the Technological Museum, Maiden had employed William Bäuerlen in 1891 as a botanical collector. Many of Bäuerlen's trips took him to the Western regions of New South Wales.²⁴ Herbarium specimens were kept in multiple sets, reliably created and cared for by Maiden and his assistant Richard Baker. Once at the Sydney Botanic Gardens, Maiden drew on the herbarium specimens held at his former place of employment. Maiden also worked co-operatively with Richard Cambage, New South Wales surveyor, to bring specimens from the regions that were harder or more expensive to reach. It was important to understand regional variation, as this contributed to the capacity to respond to the particular problems experienced by farmers, pastoralists and agriculturalists in different areas.

²³ ———, *The Road to Botany Bay: An Exploration of Landscape and History* (New York: Alfred A. Knopf, 1988), 138.

²⁴ K L Wilson, "William Bäuerlen - a 'Circumspect and Zealous' Collector," in *History of Systematic Botany in Australasia*, ed. P S Short (Melbourne: Australian Systematic Botany Society, 1990).

Maiden believed that plant species could be used to indicate particular land uses. For example, he endorsed the work of surveyor/ botanist Richard Cambage in relation to the *Eucalyptus Albens*. Cambage analysed the location of this species as an indicator of potential agricultural land. He argued: 'This species seems to slightly prefer an igneous to a sedimentary formation, but may be found on both, and is usually looked upon as an indication of good wheat-producing country.'²⁵ Maiden called this phenomenon a curving boundary, because the line that it created was read from the landscape, not as points between surveyor's pegs. As such, it followed the topography and could only be represented on the map with a curving line, thus creating boundaries between different sorts of land use. Other scientists, such as A E V Richardson, Griffith Taylor and T A Coghlan, had argued for rainfall as an indicator, but Maiden considered eucalyptus a more reliable gauge.

Using Cambage's results in this area, Maiden argued that a better understanding of the distribution of specific species could indicate 'a useful climatic boundary to agriculturists, pastoralists and others.'²⁶ Cambage and Maiden were not alone in understanding the importance of botany as indicators for climatic and regional variation. Using a combination of the local knowledge of Mr J W Stapford of South Australia and the reports to parliament by the Surveyor General J W Goyder, Maiden argued that the Goyder line was actually a curving boundary of saltbush.²⁷ This line was famously used as a division between arable productive land and barren unproductive land in South Australia.

²⁵ Cited in Joseph Maiden, "The Curving Boundary," in *A Critical Revision of the Genus Eucalyptus* (Sydney: Govt. Printer, 1925), 108.

²⁶ *Ibid.*

²⁷ *Ibid.*

Maiden actively argued for a systematic botanical survey of New South Wales and other states with the view to compiling all of this material into a botanical map of Australia. Scientific forestry, as this methodology was known, meant that forests and flora resources needed to be quantified before economic decisions could be made about land. Maiden's advocacy in this regard linked him to contemporaneous trends present in India, South Africa and Britain discerned by historian S Ravi Rajan.²⁸ Each of these countries was establishing forestry schools and bureaucracies to manage forests as an economic resource. It was beyond Maiden's control to instigate such a survey, but he continually compiled the information that he was able to gather on the collecting trips. This survey became an adjunct to the formal institutional work. In this way a piecemeal survey of the botany of the State unfolded as collecting trips covered different areas of New South Wales.

These six trips took place all over New South Wales, but the eucalyptus work additionally took men from the Sydney Botanic Gardens to South Australia and Western Australia.²⁹ As Maiden established a permanent position for John Boorman as the botanical collector he was able to leave the rudimentary collecting to him. This allowed Maiden to range further afield, taking trips interstate to explore the variety and distribution of eucalyptus. The eucalyptus collecting trips fed directly into Maiden's great scientific work *A Critical Revision of the Genus Eucalyptus*. This meant that although Maiden was employed by the New South Wales government, collecting took place outside of that official jurisdiction. The connections and networks of botanists, foresters and other interested parties meant that Maiden was welcomed in all other states of Australia in this venture.

²⁸ Rajan, *Modernizing Nature: Forestry and Imperial Eco-Development 1800-1950*, 55-102.

²⁹ Joseph Maiden, "Report on Botanic Gardens and Domains," (Sydney: Botanic Gardens, Sydney, 1898-1924).

The central theme of the collecting trips was to harvest physical material for use at the Sydney Botanic Gardens. These six trips represent only a small proportion of collecting trips taken over Maiden's twenty four years at the institution. If we expand this time frame to the first published account of a trip, then six trips are represented of the 150 – 300 trips that Maiden oversaw. Three of the trips under review in this chapter took place in the final years of Maiden's tenure at the Technological Museum – Dorrigo Reserve 1894, north-central coast forest 1895 and Hill Top 1896. The remaining three in the early years of his Directorship – Mount Seaview 1898 and Mount Kosciuszko 1898 and 1899. As such they contribute to the understanding of distribution through a method more closely associated with colonial floras: published lists of local botany. In the *Flora* the botanist enumerated all the species in a particular territory usually associated with imperial cartography.

Floras were prepared for Scotland, Britain and various colonial sites. They were especially important in the mapping and understanding of exotic places. Botanists reinforced territorial boundaries by demonstrating the plant species contained within such borders. Such stocktaking contributed to the global picture of plant biodiversity understood through western science. While the first four accounts of travelling have descriptive titles, such as 'Mount Seaview and the way thither' the final two are both articulated as a first and second 'Contribution towards a Flora of Mount Kosciuszko.' The change in title indicating the rigour expected of a professional party officially endorsed by the Sydney Botanic Gardens. In writing about these trips one imperative was to formerly acknowledge and recognise the different plant species within a location. One of the reasons that Maiden's floras were able to be distinguished from the more formal varieties produced in laboratories was that the territory was created through the travelling, rather than reflecting the imperial map.

The third and perhaps most important reason that botanical collecting trips were undertaken was to provide the raw material for three of the Sydney Botanic Gardens collections. The herbarium, the museum and the living collection all received contributions from these trips. Each trip meant a new layer of seeds, flowers, twigs, branchlets, fruit and bark to add to the collection. Processing of plants generally began in the field. Journeying in this way meant the addition of plant presses, various types of drying papers, labels and notebooks, drawing equipment, vascula and storage containers to be carried along with camping equipment. One of the most important aspects of these trips was the collection of seeds from indigenous plants. Seeds, herbarium specimens, plant cuttings and seedlings were all important exchange items in the transnational botanical network.

Collecting trips not only gathered stockpiles of plants, plant material and plant information but they also mapped the most productive areas for popular species sent out from the Sydney Botanic Gardens, as well as their seasonal changes. These were, of course, all indigenous – trees, shrubs, ferns, aquatic plants, algae and other flora – all high value trade items. Once they knew that, say, *Elaeocarpus cynaneus* produced its beautiful pink flowers in November at Port Macquarie, seeding could be estimated and they could return to collect at the appropriate time.³⁰ This type of mapping allowed collecting staff to return to targeted places for maximise the stock available for barter.³¹

³⁰ Maiden, "Mount Seaview and the Way Thither," 577.

³¹ Endersby, "A Garden Enclosed: Botanical Barter in Sydney, 1818-39."

By 1904, after the intense phase of collecting that started in 1896, Maiden boasted the following statistics in his annual report:

To make a definite statement about the strength of the Australian Herbarium,³² I counted the number of species of each State and find that the Flora of New South Wales is represented by 97 per cent of all described species; of Victoria by 96 per cent., of Tasmania by 93 percent., of extra-tropical South Australia by 85 per cent., of Queensland by 62 per cent., of North Australia by 46 per cent., of West Australia by 39 per cent.³³

This did not signal a completion of the collection. On the contrary because of the need to exchange specimens and to send packages of seeds in order to secure material for the exotic collection, these collecting trips remained a crucial part of the Sydney Botanic Gardens work until Maiden's departure in 1924.³⁴

The six trips considered here were all undertaken and published over the decade of the 1890s. They fit into a common nineteenth century genre of writing about travel. All were published in the *Agricultural Gazette of New South Wales*. The *Agricultural Gazette* was an important publication to Maiden. He was aware that one indicator of the prestige of an institution was its capacity to fund and distribute a self-styled journal. *Kew Bulletin*, *Annals of the Missouri Gardens* and the Arnold Arboretum's *Journal of Popular Information* all provided publishing platforms for the resident scientists of the particular institutions.

³² As distinct from what he referred to as the 'exotic herbarium' – ie non-Australian plants

³³ Maiden, "Report on Botanic Gardens and Domains for the Year 1903," 6.

³⁴ Collecting remains an important part of the work of the Sydney Botanic Gardens. This was particularly the case in the seed banking projects undertaken at Mt Annan.

Maiden lobbied government for a Sydney Botanic Gardens version of this type of journal. Unable to convince the government to provide a vote for such a publication Maiden remained stoic. In the 1897 annual report he declared, the *Agricultural Gazette* the leading publishing vehicle of the Sydney Botanic Gardens. In discussing the requests for information that might have had a general interest he said:

It would be published for general information did the Botanic Gardens possess a *Bulletin* of its own as do so many institutions of a similar character. The lack of special publication is, however, at present very little felt, as I can address the public on botanical and economic matters in the columns of the *Agricultural Gazette*.³⁵

Maiden was a genius for finding ways to mould the resources he had at hand in accordance with his own desires. The *Agricultural Gazette* was rarely published without an article or note from Maiden himself or one of his staff during this period. In 1898 alone, the Department of Agriculture distributed 4,400 copies of each part of the *Gazette* free to individuals, educational groups and libraries.³⁶ Little wonder that it was in this journal that Maiden chose to publish his stories about trips into the Australian bush.

Six tours

DORRIGO

The Dorrigo Forest Reserve (the Dorrigo) was located in Northern New South Wales on the Nymboida River, Daingatti *country* and was under the management of the Forestry

³⁵ Maiden, "Report on Botanic Gardens and Domains, &C. For the Year 1897," 6.

³⁶ George Valder, "Report on Agriculture and Forestry to 31 December 1897," (Sydney: Legislative Assembly New South Wales, 1898), 21.

Department.³⁷ Some debate and conjecture had opened up about bringing the lands under agricultural settlement. This seems to have stimulated Maiden's trip, although as he states himself, he was not reporting on the viability of settlement, rather he wanted to 'give some idea of the country, and subsequently to give an account of the vegetation.'³⁸ Maiden was a strong supporter of the creation and maintenance of a system of forest reserves as a way of conserving and scientifically managing forest resources for future generations.³⁹

Maiden and a single a companion camped out under canvas for a week in December 1893. He noted at the beginning of his narrative that this time wasn't particularly productive for the botanist, in that most Australian trees flowered earlier in October and seeded in March. The structure of the narrative was built around the physical movement from one place at the beginning of the trip to another. Here he started at Bellinger Heads and ended at Bellinger. The Reserve was, at that time, 23,880 acres, with Maiden's trip following the tracks and paths left by cedar getters. In this way, Maiden took readers on the journey as he experienced it. This narrative structure was used for all six trips, constantly fore-grounding and emphasising the progressive, purposeful journeying through the bush. There were three geographic features of the Dorrigo that caught Maiden's attention: the thick brush forests – 'one rarely sees the sky, except an occasional glimpse at the expense of a crick in the neck';⁴⁰ the open, but undulating grass lands - 'it would be difficult to find an area suitable and

³⁷ Maiden, "The Dorrigo Forest Reserve."

³⁸ Ibid.: 218. This article was reprinted in the journal *Indian Forester* 1895. Ravi Rajan notes that *Indian Forester* was circulated around the various forestry departments across the empire. Rajan, *Modernizing Nature: Forestry and Imperial Eco-Development 1800-1950*, 79-102.

³⁹ Joseph Maiden and R. Dalrymple Hay, *Forestry Handbook* (Sydney: W.A. Gullick, Government Printer, 1915), Joseph Maiden, "The Botany of Howell (Bora Creek): A Tin Granite Flora," *Proceedings of the Linnean Society of New South Wales* 31 (1906), Joseph Maiden, "Anniversary Address," *Royal Society of New South Wales Journal and Proceedings* 31 (1897), Maiden, "Report on Botanic Gardens and Domains for Year 1899.", George Valder, "Report on Agriculture and Forestry," (Sydney: Votes and Proceedings New South Wales Legislative Assembly, 1898).

⁴⁰ Joseph Maiden, "The Dorrigo Forest Reserve," *Agricultural Gazette of New South Wales* (1894): 444.

sufficient for a cricket pitch'⁴¹ and the mountainous terrain 'one side' of the road which was 'often so steep that contemplation of it might make one feel giddy.'⁴² Travelling along the cedar tracks, Maiden recorded how the forest had been used in the past for the extraction of a timber resource for economic purposes. He acknowledged that this industry had almost exhausted local supplies, but was quick to point out the other types of trees that could also be logged. In this way the journey was presented as a chronicle of the breathtaking views and vistas, but also as an account of the forest's economic potential.

NORTH-CENTRAL COAST FORESTS

Maiden travelled to what he called the north-central coast forests with John V de Coque. North central forest, an indistinct region north of Sydney, was halfway between the capital and the Queensland border and bounded by the Great Dividing Range. These two men had been charged by the Minister for Agriculture to examine 'the Turpentine-cobra question.' Turpentine *Syncarpia laurifolia* was a cheap timber used extensively in marine and estuarine construction.⁴³ Wharves and bridges often used turpentine piles because of their durability in water.⁴⁴ The underside of locally built punts could also be lined with this timber. The cobra *Teredo sp* was an estuarine mollusc that grew to a foot in length and burrowed into the timber, eventually honeycombing it and rendering it useless for load bearing.⁴⁵ Indigenous historian Vicki Grieves points out that the cobra was a food delicacy for Worimi people of

⁴¹ Ibid.

⁴² Ibid.

⁴³ ———, "Useful Australian Plants, No. 12. - the Turpentine Tree," *Agricultural Gazette of New South Wales* 5, no. 7 (1894): 465.

⁴⁴ Thanks to marine contractor Craig Turner who talked to me at length about Turpentine and its uses in construction in river and harbour zones.

⁴⁵ Joseph Maiden, "Syncarpia Laurifolia, Ten., the Turpentine Tree," in *The Forest Flora of New South Wales*, Vol 1, (Sydney: William Applegate Gullick, 1904).

the bush through which Maiden travelled.⁴⁶ De Coque and Maiden had also together reported on the use of spotted gum for wood-paving.⁴⁷

This journey took Maiden and de Coque from Hexham to Kempsey. In between they visited Raymond Terrace, Stroud, Gloucester, Krambach, Brushy Mountain, Failford, Forster, Taree, Camden Haven and Port Macquarie. It was the forest trees that dominated this narrative. He described the individuals, and was always interested in analysing the dominant species of a particular tract of bush that he either passed or was botanising. He argued that his goal here was to 'bring home the readers of the *Gazette* a livelier appreciation of our grand national asset in the north-central coast districts.'⁴⁸ This meant that rather than providing a neutral description, he depicted what he saw through the lens of an economic botanist. He wrote 'We traverse pleasant undulating country, until we pass Weistmantel's twelve miles from Stroud ... observing ironbark, grey-box, forest red-gum, a little grey-gum, and rough-barked apple on our way.'⁴⁹

He didn't just take note of indigenous or bush trees; he also described farms by their agricultural crops or the weed species in their paddocks. The area's pre-eminent business, the Australian Agricultural Company was described in association with the mulberry trees, while an 'industrious' Italian community was noted due to the 'small vineyards' they kept. Everything was seen through a botanical lens. Rather than a land that needed to be occupied because of its emptiness, this land was being reoccupied. This type of writing and mapping of

⁴⁶ Vicki Grieves email communication, 2007.

⁴⁷ Maiden, Conway, and Coque, "Report on Spotted Gum, with Especial Reference to Its Value for Wood-Paving."

⁴⁸ Maiden, "Notes of a Trip to the North-Central Coast Forests of New South Wales," 606.

⁴⁹ *Ibid.*: 586.

land offers a local continuity of a type of imperial travelling that Mary Louise Pratt calls 'the monarch-of-all-I-survey.' However it also normalised the presence of the collector and the use of land for agriculture or pastoralism.⁵⁰ At the same time it emptied the land of indigenous presence.

Margaret Somerville points out that in the late twentieth century 'there is still an overarching sense that all the landscape is marked by Aboriginal stories.'⁵¹ If it is true of the present then this must also have been the case when Maiden was travelling through Australia.⁵² However, Maiden was not equipped to read these stories of the landscape as he had insufficient knowledge of indigenous epistemologies. Maiden moved through the bush and saw with imperial eyes.⁵³ This did not mean that Maiden did not see indigenous people or their interrelation to land, rather, he observed them in light of the cognitive mapping that he had inherited as a British-born white Australian.⁵⁴

One of the distinctive features of Maiden's writings about his collecting trips was the notated lists of plant species encountered in this travels. As he records what he saw, he included a persistent notation of indigenous foods.

⁵⁰ Mary Louise Pratt, *Imperial Eyes: Travel Writing and Transculturation* (London: Routledge, 1992), 201.

⁵¹ Margaret Somerville, *Body/Landscape Journals* (Melbourne: Spinfex Press, 1999), 5.

⁵² See for example Martin Edward Thomas, *The Artificial Horizon: Imagining the Blue Mountains* (Carlton, Vic.: Melbourne University Press, 2003), Goodall, *Invasion to Embassy: Land in Aboriginal Politics in New South Wales, 1770-1972*, Mark McKenna, *Looking for Blackfellas' Point: An Australian History of Place* (Sydney, NSW: UNSW Press, 2002), Main, *Heartland: The Regeneration of Rural Place*.

⁵³ See also Geoff King, *Mapping Reality: An Exploration of Cultural Cartographies* (New York: St Martin's Press, 1996), Simon Ryan, *The Cartographic Eye: How Explorers Saw Australia* (Cambridge; Melbourne: Cambridge University Press, 1996).

⁵⁴ Marilyn Lake has mapped the transnational emergence of whiteness as a masculinist project across the settler nations of South Africa, Australia and America. Marilyn Lake, "White Man's Country: The Trans-National History of the National Project," *Australian Historical Studies* 34, no. 122 (2003), Lake and Reynolds, *Drawing the Global Colour Line: White Men's Countries and the Question of Racial Inequality*.

The two native grapes (*Vitis hypoglauca* and *Vitis Antarctica*), here form cables to the highest trees, while blackfellows' potatoes (*Colocasia macrorrhiza*) were here in the moister portions of the brush-land in the greatest profusion, associated with numerous ferns.⁵⁵

The inclusion of this indigenous use of food plants was a response to fears of being lost in the bush. Peter Pierce argues that this anxiety, bound up with the loss of children, was most readily seen as a trope in literature and art.⁵⁶ Maiden was well aware of the unsettling influence of the dangers of travelling and collecting. If a collector did become lost in the bush, they could attain shelter, horses, companionship and water in the places that they travelled, but it was life threatening if food supplies ran out.

Maiden saw the story of the death of the men of the Burke and Wills expedition as a warning to all people who travelled unprepared into the bush. He wrote 'It may be that the unfortunate members of this party a wider knowledge of the plants in the desert best calculated to sustain life, they would not have pinned their faith so implicitly to the dried up sporocarps of the Nardoo.'⁵⁷ This was the one aspect of indigenous culture to which Maiden paid close attention. In the *Useful Native Plants of Australia*, this knowledge was converted into useful knowledge. Indigenous plants that were categorised as food were largely based on indigenous knowledge. Maiden published less about other types of indigenous knowledges concerning plants because he did not see them as useful. Maiden understood that many of the people who would take up land under closer settlement schemes were novices. Knowledge about food plants equipped newcomers against the odds. Ironically, despite Maiden's interest in

⁵⁵ Maiden, "Notes of a Trip to the North-Central Coast Forests of New South Wales," 585.

⁵⁶ Peter Pierce, *The Country of Lost Children: An Australian Anxiety* (Cambridge; Melbourne: Cambridge University Press, 1999).

⁵⁷ Maiden, "Some Plant-Foods of the Aborigines," 349.

indigenous foods, his description of this trip does not include information regarding the consumption of cobra *Teredo sp.*

HILL TOP

Hill Top on the Southern Highlands was sixty-nine miles south of Sydney, a small country town nestling between Colo Vale and Mittagong. Maiden selected this spot for a visit because it was out of the way and 'unfashionable' which meant that 'one could for a time abandon starched linen and other outward signs of respectability.'⁵⁸ Travelling there in January 1896, Maiden happily stated that main aim of this trip was a holiday. Maiden's wife occasionally travelled with him on collecting trips, and it was possible that his children also accompanied him if this was a holiday, but he does not ever write about them as collecting companions. It is uncertain whether they accompanied him to Hill Top. Favoured holiday destinations at this time were the Blue Mountains and seaside resorts like Manly.⁵⁹ One of the distinctive features of such tourist sites was their capacity as ameliorative sanatoria for urban dwellers. While it may have been unfashionable, Maiden saw in Hill Top all the attributes of these other sanatoria, remarking that, it had both 'pure, exhilarating mountain air' and comparable scenic gullies to those found in the Blue Mountains.⁶⁰

Maiden's purpose for writing about this particular trip was to encourage the enhancement of local botanical knowledge. Threading through all of his writing about collecting was a conviction that understanding the botanical world boosted a nationalistic attachment to

⁵⁸ ———, "Concerning Hill Top."

⁵⁹ Julia Horne, *The Pursuit of Wonder: How Australia's Landscape Was Explored, Nature Discovered and Tourism Unleashed* (Melbourne: The Miegunyah Press, 2005), Thomas, *The Artificial Horizon: Imagining the Blue Mountains*.

⁶⁰ Maiden, "Concerning Hill Top."

Australia. An individual could create their belonging through a mapping of local botany, by intimately knowing the environment physically closest to them. If this mapping was then passed on to the Sydney Botanic Gardens it was, in Maiden's mind, 'work the importance of which can hardly be over-estimated.'⁶¹ He knew that this work was not likely to be of professional standard, in contrast to material he received from his regular collectors and correspondents such as Richard Cambage or A H S Lucas. However, in the quest to survey the state and enhance the collections, some information was better than none.

Maiden's travelling vignette provided an example of the sort of knowledge that might be produced at a local level. He used *Flora Australiensis* as a guide for discerning the plants, but also followed Bentham's systematics. These reference works were readily available to those interested. They were also scientifically sound such that this recommendation of guidelines meant that he could hope for some uniformity when material reached him. His treatment followed the scientific orders rather than common names or species. Each plant that he found at Hill Top was described and any information that he could add was written up. In this way local lore and colour were added to the formal identification of plants. In providing this example, Maiden was modelling for a reading audience the sort of information that he would welcome at the Sydney Botanic Gardens.

MOUNT SEAVIEW

One distinctive group of books that Maiden acquired in his early days at the Sydney Botanic Gardens were accounts, journals, facsimiles and books about exploration in Australia.⁶² Most

⁶¹ Ibid.

⁶² ———, "Report on Botanic Gardens and Domains."

exploration parties collected specimens of natural history, including botanical material. Accumulating these written accounts stimulated Maiden's fascination with the tracks of former collectors. A common theme for Maiden was the retracing of explorers' journeys, collecting and supplementing the material for the herbarium.⁶³ Historical re-enactor Stephen Gapps sees this as a way of performing history 'by clothing the body with signifiers of authenticity, surrounded by staged and evocative landscapes provides a window onto the possibility of how the past might have looked and felt.'⁶⁴ These signifiers for Maiden were the collecting practices, the ability to discern and identify the same plants as his predecessors. Furthermore, such trips gave him the opportunity to compare his own multi-sensory experience of place with that of the early explorers. Retracing the paths forged by earlier collectors also had the effect of reifying a particular way of seeing the land and being in the environment.

Maiden's trip to Mount Seaview, near Port Macquarie, in December 1897 was one such trip. The Victorian botanist Ferdinand Von Mueller had encouraged this trip, speculating that Maiden would find a rich botanical bounty; he did not.⁶⁵ In planning for this journey, to be taken with William Forsyth, the overseer of Centennial Park, it was John Oxley's exploration that they used as a guide. From 1812 Oxley was the surveyor general of the colony of New South Wales. On his trip in 1818, he explored around the Mt Seaview area and discovered the Hastings River and Port Macquarie area of Biripi *country*. This journey was published as a

⁶³ See Joseph Maiden, "Botanical, Topographical and Geological Notes on Some of the Routes of Allan Cunningham" *Proceedings of the Royal Society of New South Wales* (1909): 128-38.

⁶⁴ Stephen Gapps, "Authenticity Matters: Historical Re-Enactment and Australian Attitudes to the Past," *Australian Cultural History* 22 (2003).

⁶⁵ Maiden, "Mount Seaview and the Way Thither."

part of *Journals of Two Expeditions into the Interior of New South Wales* in 1820. A copy of this work was shelved in the Sydney Botanic Gardens library.⁶⁶

Maiden keenly retraced the collecting grounds of earlier botanists and collectors. In particular he and his staff reworked the steps of Cunningham and Caley. In doing so Maiden took on the imaginative journeys expressed in each botanist's journal and writings and made them his own. Horne points out that exploration during that earlier phase became a 'male rite of passage.'⁶⁷ By repeating the exercise, Maiden could replicate the collections held in European herbaria, but he also made material the imaginative journey. He walked where they walked. However, where these earlier collectors provided plants for an imperial purpose, Maiden reorganises the bounty from these trips as Australian, thus imbuing them with a local sense of purpose. Rather than supplying material for the Royal Botanic Gardens in Kew, these new collections were for the National Herbarium of New South Wales. Collecting in both time frames mobilised plants, plant material and plant information for the sake of economic benefit. Maiden's was, however, raised specifically to nurture Australian possibilities in this regard.

Maiden's trip also evidenced the changes brought to the landscape in the seventy years between the two journeys. Maiden included a map as an appendix to this article that neatly demonstrates these changes. Maiden marked the towns such as Yarrowitch and Tia; Waterloo and Walcha. Rivers, streams and creeks are also located in a way that represented progressive knowledges of place. Geographic features such as waterfalls, extinct volcanoes, canyons and

⁶⁶ John Oxley, *Journals of Two Expeditions into the Interior of New South Wales in the Years 1817-18* (London: John Murray, 1820).

⁶⁷ Horne, *The Pursuit of Wonder: How Australia's Landscape Was Explored, Nature Discovered and Tourism Unleashed*, 64.

swamps are all detailed. Enterprises that indicated the various types of settlement included Yeldham's Boarding House and Post Office; Lahey's selection; upper sheep station; Tobin's camp and 'an old cretaceous river bed now being worked for gold.'⁶⁸ Geological features were also layered into the mapping – basalt, granite and silurian formations were all noted to indicate the type of place where Mount Seaview was located. In writing about retracing Oxley's steps, Maiden also represented the progressive settling that had taken place between 1820 and the 1890s. Maiden took this information regarding European colonisation as a naturalised aspect of the Mount Seaview landscapes.

MOUNT KOSCIUSZKO

Maiden's motivation for visiting Mt Kosciuszko, twice, was unclear. Both trips were taken in January, one in 1898 and the second in 1899. In 1898, he travelled with Herbert Carter, teacher at Sydney Grammar School; Percy Shaw, Public Works Department and Mr Quin. They spent three days on the mountain. A larger party went the second year, for an extended period of ten days. They were J Fletcher, Secretary of the Linnean Society; A H S Lucas; William Forsyth. These men were guided by Jindabyne local Fred Collins and his son. Martin Thomas makes the point, in relation to 1948 American-Australian Scientific Expedition to Arnhem Land, that the difference between a horse ride and a journey of science is the artefacts, objects, photographs and narratives that return with the participants to be circulated again and again. Keeping these discourses and things in motion keeps them animated.⁶⁹ This botanising tour yielded two main areas for Maiden to promote as useful. One was a narrative that promoted the alpine region as a tourist destination, albeit a remote, largely inaccessible

⁶⁸ Maiden, "Mount Seaview and the Way Thither."

⁶⁹ Martin Thomas 'The Hilarity of Race' unpublished seminar paper delivered at the History on Monday Seminar Series, 13 October 2008, Department of History, University of Sydney.

one. Secondly, he wrote about the potential of Alpine flowers in the ornamental gardening market.

Both of the articles about Mt Kosciuszko begin by introducing the region through the lens of tourism. He detailed the journey to the Snowy Mountains by train to Cooma, by coach to Jindabyne and by horse to Merritt's camp and by foot to the summit. Prior to his first trip he used a variety of resources to enlighten him about the area into which he would be venturing. The Tourist Agency, Sydney, pamphlets produced by the Railway Commissioners, newspaper articles and a range of botanical texts were consulted before he left Sydney. He marvelled upon arriving at Jindabyne: 'the view reminding one at once of Piguénit's beautiful canvases' evoking a romantic perception of the landscape with which Piguénit's work was associated.⁷⁰ This was before Piguénit produced two paintings of Mt Kosciuszko commissioned by the New South Wales Art Gallery in 1902.⁷¹

Unlike some botanising trips, this meant that his imaginative expectation of what scenery and botany he would encounter was well formed. He was dubious about whether Mount Kosciuszko could ever become a sanatorium in the manner of the Blue Mountains. He felt that the mountains were too far away and that the climate was too severe to warrant the development of support infrastructure. He concluded that 'it cannot be safely, or at all events, comfortably dwelt upon (as a rule), for periods sufficiently long to remunerate any hotel-keeper.'⁷² Given Maiden's expectation that it *might* become a sanatorium, however, the

⁷⁰ For the importance of art to colonial perceptions of environment see Tim Bonyhady, *The Colonial Earth* (Carlton, Vic.: Miegunyah Press, 2000).

⁷¹ Horne, *The Pursuit of Wonder: How Australia's Landscape Was Explored, Nature Discovered and Tourism Unleashed*, 223.

⁷² Maiden, "A Contribution Towards a Flora of Mount Kosciuszko," 722.

journey was relayed in a narrative that expressed the tourist-like qualities of the mountains. He went to the Snowy Mountains expecting to find sublime views and invigorating mountainous experience, and when he did he reiterated and promoted this way of seeing and being in Australia for the readership of the *Agricultural Gazette*.

The narrative jostles between the dangers of the mountainous terrain and the exhilaration of the panoramas, vistas and views that are made available by venturing into this inherently risky zone. Even in January, the height of summer in Australia, the travellers found the Alpine region to be blustery and cold. Maiden echoes all of the enunciations of those who had come before him when he wrote about coming to the peak of the highest mountain in Australia.

As one turns round, with but little to obstruct the view at this height, the practically illimitable panorama of mountain and valley is perplexing. It is grand, sublime, ennobling!⁷³

This descriptive passage fits into a way of understanding the newly forming tourist industry in Australia, and the language available to write about mountainous travelling. As Horne points out the use of the word sublime to describe mountainous views had transitioned through the nineteenth century. Where once it connoted a capacity for inspiration in the experience of contemplating sublime scenery, Maiden uses this language more as a travel cliché – uplifting yes, but not unsettling to the senses.⁷⁴

⁷³ Ibid.

⁷⁴ Horne, *The Pursuit of Wonder: How Australia's Landscape Was Explored, Nature Discovered and Tourism Unleashed*, 225.

Rather than being shaped by the tourist-like experience of the journey, Maiden's other articulation of the usefulness of Mount Kosciuszko – its ornamental botany – seems shaped by the preoccupations of the city. As Maiden wrote up the botanical list that accompanied the narrative of his summer trips to the snowy mountains, he included the beauty and spectacle of the delicate Alpine flowers into possibilities for domestic gardening. Tom Griffiths explained this approach to land thus: 'explorers and settlers did not describe the land as it was; instead they divined what it lacked or imagined what it might become.'⁷⁵ This included the relocation of these beautiful flowering plants into rock gardens, back yards and formal parks: in other words – Alpine plants were imagined to be useful as aesthetic adornments. Maiden cautioned that Sydney was not viable, but residents of the Blue Mountains, the Southern Highlands and the New England ranges could potentially experiment with these plants.

Dianella tasminica, he suggested, 'are specially promising for horticultural purposes.' He described the beauty of tiny flowers like Australian Edelweiss *Raoulia Catipes*, Buttercups *Ranunculus*, flowering grass species and plants with tiny berries. He wrote:

Many of the plants to which I have referred are not yet in cultivation; but although it would be difficult to deal with them in the climatic conditions of Sydney, many rockeries and other places in gardens in the colder parts of the Colony remain, in the near future, I trust, to be adorned with some of the gems of Mt Kosciusko flora.⁷⁶

Lists of plants were added to the travelling narrative. Brief, pithy descriptions of their attributes, flowers, leaves, growth patterns and colour were also included. While

⁷⁵ Tom Griffiths, "Cooper Dreaming," in *A Place on Earth: An Anthology of Nature Writing from Australia and North America*, ed. Mark Tredinnick (Sydney, NSW: University of New South Wales Press, 2003), 82.

⁷⁶ Maiden, "A Second Contribution Towards a Flora of Mount Kosciusko," 1038.

acknowledging the remoteness of the location, Maiden also implored readers to use these lists as guides to the wildlife of the area, should they ever have the opportunity.

The question of biopiracy?

As Maiden and the other collectors travelled, they encountered what Paul Carter calls European historical space, that is – ‘a space constituted culturally, according to social, economic, and above all, intellectual criteria.’⁷⁷ In treating the bush as bit parts of indigenous species, rather than seeing them as part of a larger ecology of indigeneity, this manner of travelling through a landscape was complicit with dispossession. As George Main argued in *Heartland*, agriculturalists and pastoralists approached the land completely differently to indigenous people. In the late nineteenth century Wiradjuri people still lived in what became the Cootamundra district. With closer settlement and paternalistic policies, these peoples were removed from their homelands and relocated to reserves at Brungle, Warangesda and Hollywood.⁷⁸ Collectors travelled through these areas, once peopled and managed in other ways. This was an ongoing project of colonial appropriation, never complete, but always part of a process of settling in Australia.

The returned bounty of these plants, plant material and plant information to the Sydney Botanic Gardens archived Australian plants. Drying the leaves, branches, flowers and seeds of plants that grew in Australia allowed plant collectors to move plants out of their habitats. It was here that a transformation began, the plant was no longer *Yar-warra*, or of Gundungurra culture. The plants became disconnected from narratives of original habitats and instead

⁷⁷ Carter, *The Road to Botany Bay: An Exploration of Landscape and History*, 325.

⁷⁸ Main, *Heartland: The Regeneration of Rural Place*, 12.

became vessels for imperial possibilities. Londa Schiebinger refers to this process as a narrative stripping, where the narratives of the colonised give way to the science of the coloniser.⁷⁹ Plants gather to them the knowledges and narratives that shift along these paths. Schiebinger demonstrates what happens to the knowledge about the peacock flower *flos pavonis* as it moved from the Caribbean to Europe.

In this case the knowledge of the plant's use as an abortifacient was knowingly lost in the process of transfer. Schiebinger argues that Europeans 'collected the bounty of the natural world, but sent "narratively stripped" specimens into Europe.'⁸⁰ She argues that the discourse surrounding the masculinising of gynaecology combined with a Christian ethic of importance of human life saw the knowledge about the poinciana's chemical use as an abortifacient and emmenagogue left behind in the colonies. In doing so she demonstrates how transnational movement across distance altered knowledge according to different gender and race privilege from one setting to another. Schiebinger shows that a new narrative supplanted the old; they did not enter Europe naked, but re clothed for a new audience. This does not happen overnight. No historical time can be found to match this moment. Instead a seeping occurred; a process of disassembling and reassembling.

What *was* certain was that this process began in the field as Maiden and his staff pressed plants to remove moisture and then mounted the elements together on paper to form a herbarium specimen; or sketched the beginnings of a botanical illustration; or collected cuttings to grow in the gardens; or exchanged seeds with other institutions. When the Sydney Botanic Gardens staff undertook collecting trips to places like Gundungurra land it meant a

⁷⁹ Schiebinger, *Plants and Empire: Colonial Bioprospecting in the Atlantic World*, 87.

⁸⁰ *Ibid.*

new layer of seeds, flowers, twigs, branchlets, fruit and bark to add to its herbarium, museum and living collection. This meant that a process of selecting narratives occurred at these sites: knowledges about some aspects of indigenous life were carried with the collectors, but others, not conforming to the perception of usefulness, were lost on the travellers. From this collection other forms of colonial and transnational knowledge were generated and circulated.

Both indigenous and non-indigenous writers, critics and historians make an important distinction between the general removal of plant material and the appropriation of indigenous knowledges for use by Western science. Vandana Shiva coined the term biopiracy to articulate the manner in which traditional knowledges of plant matter gathered by western researchers, only to be rearticulated as western science. As a part of this process, all profits and benefits remain under the control of western conglomerations and governments.⁸¹ Such institutions prefer the term bioprospecting.⁸² Ecofeminist activists have mobilised around this issue, particularly in the realm of patents, which legally enforce the rights of scientists at the expense of the rights of indigenous peoples.

⁸¹ Val Plumwood, "Feminism and Ecofeminism," in *Feminism and the Mastery of Nature* (London: Routledge, 1993), Vandana Shiva, *Staying Alive: Women, Ecology and Development* (London: Zed Books, 1989), Vandana Shiva, *Tomorrow's Biodiversity* (London: Thames & Hudson, 2000), Vandana Shiva and Ingunn Moser, eds., *Biopolitics: A Feminist and Ecological Reader on Biotechnology* (London & Penang: Zed Books & Third World Network, 1995), Vandana Shiva, "The Future of Food: Countering Globalisation and Recolonisation of Indian Agriculture," *Futures* 36, no. 6-7 (2004), Vandana Shiva, "Piracy through Patents: The Second Coming of Columbus," in *Biopiracy: The Plunder of Nature and Knowledge* (Boston, MA: South End Press, 1997), Vandana Shiva, *Biopiracy: The Plunder of Nature and Knowledge* (Boston, MA: South End Press, 1997).

⁸² See for example: George M Garrity and Jennie Hunter-Cevera, "Bioprospecting in the Developing World," *Current Opinion in Microbiology* 2, no. 3 (1999), Schiebinger, *Plants and Empire: Colonial Bioprospecting in the Atlantic World*.

Indigenous scholar Aileen Moreton Robinson describes this process:

For example, they ask us to identify Indigenous bush medicine plants. Then they record the plants, take samples, conduct tests in the laboratory and file a patent which gives them ownership of the discovery of the drug derived from the plant.⁸³

She labels the paradox at the heart of this circulation of plants and plant knowledges as 'Terra Knowlegius'- knowledge belonging to no-one.' In this she infers that the shift in ownership occurred at a point of removal that involved indigenous *agency*. Plants that are not associated with indigenous knowledge are superfluous. While Shiva, Moreton-Robinson and other ecofeminists are largely concerned with the late twentieth century manifestations of this process, there should be no doubt that precedents for the theft of plant knowledge date back to the earliest colonial encounters.

Calestous Juma,⁸⁴ Lucille Brockway⁸⁵ and more recently Kativa Philips all detail the occurrence of this type of biopiracy in earlier encounters between colonists, indigenous peoples and their knowledges. South American Chincona stands as the quintessential case of colonial biopiracy. The bark of this tree was used as the base chemical in the production of quinine, the anti-malaria drug. Despite the guarding and protection of the Peruvian *cascañeros* and *collahuayas*, the Dutch managed to steal enough samples of the tree to establish it at the Buitzenberg Botanic Gardens in Java. The first plantations were grown just south of Batavia in Java in 1852, thereby crushing the South American supply in the global

⁸³ Moreton-Robinson, "Unmasking Whiteness: A Goori Jondal's Look at Some Duggai Business," 33.

⁸⁴ Calestous Juma, *The Gene Hunters: Biotechnology and the Scramble for Suitable Seeds* (London: Zed Books, 1989).

⁸⁵ Brockway, *Science and Colonial Expansion: The Role of British Royal Botanic Gardens*.

marketplace.⁸⁶ This provided a point of imperial rivalry to which the Royal Botanic Gardens Kew similarly contributed via the development of plantations in India.⁸⁷

There is a problem with how these activities line up when considering the field work of the Sydney Botanic Gardens. This suggests that only the plants that are *already* mixed with knowledges are feasibly understood as part of the activity of biopiracy. Moreton Robinson falls into the trap of valuing only those plants that have labour mixed with them – albeit intellectual labour, but just as often physical labour. Plants that have been used as the basis of medicine, plants that were prepared in particular ways for eating, plants that have been incorporated into ceremony or song, plants that provide the raw materials for hunting and travelling can all be identified as indigenous knowledge. For Maiden, his interest in plant knowledge of indigenous people was shaped through the possibilities of adaptation to settlement life. Hence his evaluation of a plant's value being linked to its edibility.

Within this array of traditional uses, all have in one way or another been removed into collections that sever indigenous ownership and reinstate that ownership in other hands. Some have ended up as prized possessions in museum exhibits, others as art, others helped to create popular figures such as the bush tucker man, Les Hiddons.⁸⁸ Plants and environments exist beyond these many manifestations. Environments are and were valued within indigenous culture for more than what they were able to yield, whether this was medicinal,

⁸⁶ Philip, "Imperial Science Rescues a Tree: Global Botanic Networks, Local Knowledge and the Transcontinental Transplantation of Cinchona," 174-76.

⁸⁷ Lucile H. Brockway, "Kew and Chichona," in *Science and Colonial Expansion: The Role of the British Royal Botanic Gardens* (New York: Academic Press, 1986).

⁸⁸ Les Hiddins, *Bush Tucker Field Guide* (Ringwood, Vic.: Penguin, 2001), Les Hiddins, *Explore Wild Australia with the Bush Tucker Man* (Ringwood, Vic.: Penguin, 1999).

culinary or ceremonial. The Sydney Botanic Gardens was an active agent in transforming these plants by identifying and detailing them as botany.

The effect of these articulations, even from within indigenous scholarship, categorises some plants as useful, or attached to knowledge as distinct from those that are useless, unimportant or sidelined in the stakes of removal for the purposes of global capitalism. This is a dangerous line to take, as it becomes a rearticulation of *Terra Nullius* thus risking a repetition of the emphasis on labour mixed with land as a requirement of entitlement. Indigenous belonging is premised on a different set of criteria altogether, thereby providing a counterpoint to this framing of the usefulness of plants. Indigenous people in Australia clarify this different perspective on land through the use and mobilisation of the term *country*. Although an English word, indigenous people use it to connote a way of thinking about environment and attached knowledges that are incommensurably different from that of western epistemologies of land.⁸⁹ However, to the extent that the term *country* connotes all spatiality of life and living, it does not exclude the western idea of 'land mixed with labour' from its knowledges. Nevertheless, these understandings are not necessarily able to be accessed from western epistemic standpoints – nor should they be. Within this more wholistic frame, how can we understand the Sydney Botanic Gardens collecting practices which are premised on the wholesale removal of plant life for the purposes of science?

Maiden was not only interested in the plants associated with indigenous knowledge that could be re-arranged. His plant collectors and botanists were just as interested in the array of plant

⁸⁹ Deborah Bird Rose, *Nourishing Terrains: Australian Aboriginal Views of Landscape and Wilderness* (Canberra: Australian Heritage Commission 1996), Jay Arthur, *Aboriginal English: A Cultural Study* (Melbourne: Oxford University Press, 1996).

species that could be removed from local environments but may not have been framed as useful indigenous knowledges – they took samples of everything. Inherent to their quest to provide the collection with material was a desire to create complete mapping of Australian flora. They collected everything that could contribute to this endeavour, and did not discriminate about types of plants, or ownership. This raises an interesting quandary – if we consider only plants that are laboured as indigenous knowledge, then what does it mean when plant collectors took all these other plants into the repositories at the Sydney Botanic Gardens?

This other type of plant collecting could be framed as a non-detrimental activity, a harmless gathering of plant material. Instead it gathered what could regenerate itself. Whatever was collected in the form of branches, clippings and seeds would regrow. This would seem to be a minimalist intervention of colonial science – its power was made invisible. After all, Maiden's plant collecting simply sampled environments; it didn't sweep aside in the manner of pastoralism, it didn't clear, furrow and plant in the manner of agriculture and it didn't supplant urban infrastructure in the creation of new towns and buildings. It is a mistake, however, not to acknowledge that the contribution made by Maiden and the Sydney Botanic Gardens to pastoralism, agriculture and town planning commenced with the collecting of raw material from *country*.

The main aim of collecting all plant matter for archiving at the Sydney Botanic Gardens to initiate circulation of plants, plant material and plant information through transnational science and global economies. In the same way that plant knowledge could end up as patented and owned within western forms of governance, so too did other sorts of plant

material end up modified and changed to meet the requirements of capitalism. How can we articulate the processes of science as colonial without acknowledging that the first step in the process begins in the collection of plant life? Sometimes such material was collected with local lore, but just as often collected without specific reference to indigenous knowledge. All of this material came from *countries* across the continent and ultimately supported the settlement of Australia as it circulated, was reformulated, sciented and in the end most often returned to the colonial project in a different form.

If the act of collecting was viewed as a stand alone activity, then the broader ramification of such work disappears. This work needs to be understood as a part of a process that moved botanical knowledges to enable and facilitate the sweeping changes to environments all over the world. It was not the smallness of this that we should think about, but the exponential repetition of this removal *across the globe* and the size and power of the complex into which such raw materials were fed and then circulated back into colonial environments. Once returned to Sydney, the Sydney Botanic Gardens began the transformation of plants into scientific knowledge. The next chapter moves along the network and considers the production of botanical knowledge as a scientific description of *Eucalyptus pilularis*.

Chapter Three

Eucalyptus pilularis: Producing Names in the Settler-Colony

Between 1909 and 1924, Joseph Maiden produced the eight volumes of *A Critical Revision of the Genus Eucalyptus*.¹ He commenced this work on what he called the ‘national genus’ in the time of Federation. It was one of his contributions to the nationalising project.² The first description in the *Critical Revision* was that of *Eucalyptus pilularis*. Maiden specifically had the parts to this series printed in the thousands so that he could send them out from Sydney. Such a publication was stock in trade for botanists, and was available to a readership located across the nation, across the empire and across the globe. The description was an amalgam of various scientific practices performed by Maiden at the Sydney Botanic Gardens. It involved field and laboratory work and synthesised eucalyptus, eucalyptus material and eucalyptus information to create movable botanical knowledges. The eucalyptus, once described scientifically, entered the botanical lexica both nationally and transnationally. As such, the scientific description of the eucalyptus operated, in effect, as a translation between dispossession of Australian *country* and transnationalised botanical knowledge.

¹ Hereafter *Critical Revision*.

² Joseph Maiden, "Sketch of the Botany of the County of Cumberland," in *Handbook of New South Wales*, ed. British Association for the Advancement of Science (Sydney: Edward Lee & Co, 1914), 370.

Richard Drayton maintains that the Royal Botanic Gardens in Kew promoted the publication of colonial floras for the pursuit of imperial economics. These books were compilations of scientific descriptions of all the plants found within a particular colonial territory. He goes on to argue that there is no clear evidence that these floras did contribute to imperial prosperity.³ What Drayton misunderstood was that floras were used to disseminate information and knowledge far and wide, not simply garner monetary return. Whether Maiden was discussing street trees, pest species, or national emblems, he did so with reference to the botanical floras. These works provide crucial authenticity to the displacement of plants within the logic of colonisation. Once plants were described, analysed and the subject of research, it was possible to discern what service they could be to settling land and people. Scientific descriptions are the bedrock of all other types of scientific, horticultural and agricultural work by the Sydney Botanic Gardens.

In 1909, the Gardens entomologist Walter Froggatt received a letter from the Physiologist of the United States Department of Agriculture, D True requesting 'ten pounds each of a dried plant of the following species, *S. galegifolia* and *S. grayana*' (sic).⁴ These species of *Swainsonia* were deemed to be poisonous to stock in both Australia and America. True desired samples of the plants so that testing could be carried out in Washington. By March 1911, the Sydney Botanic Gardens collector John Boorman had partially fulfilled the desiderata but was twelve pounds short of True's request. In May 1911, a parcel of four pounds of *S. grayana* and *S. galegifolia* were mailed to Washington. This may seem an obvious, superfluous point, however without the information that scientific descriptions and

³ Richard Drayton, "The Professionals and the Empire: The Hookers at Kew," in *Nature's Government: Science, Imperial Britain and the 'Improvement' of the World* (New Haven: Yale University Press, 2003), 206.

⁴ Letter exchange Walter Froggatt and D True, 1909, RBGS, Correspondence files (Herbarium), 1907-1948 SR NSW 8/262. 3237

colonial floras supplied, True could not have made that request and Maiden would have had no means of supplying the correct seeds. So while Drayton may be right, he underestimates the reach of these botanical knowledges into many various aspects of colonial life. *Eucalyptus sp.*, as native Australian plants, were very important in the trade and exchange of seeds and plant material. As such it was vital that the Sydney Botanic Gardens could send seeds and other items that were appropriately named and catalogued.

Scientific descriptions written in the late nineteenth century played a role in constituting the 'imaginative possession'⁵ of colonial Australia. They wrote a relationship to land that privileged western conceptions of place, ownership, people and science. While scientific descriptions emerged from the disciplinary practices of transnational botanical science, Maiden extended this format to include both vernacular and Aboriginal names. Indigenous and vernacular knowledges were marked in this scientific writing in entirely different ways, one as appropriated from a doomed race and the other empowered by virtue of being language used by settlers. Nevertheless each contributed to the textual marking of the other. This chapter provides a close reading of the naming practices used by Maiden in his scientific descriptions. Maiden challenged the precepts of metropolitan science and his descriptions represent localised knowledges of the Australian culture in which he was embedded. *E.pilularis* is just one example of his work and is used here to anchor the methods and meanings of naming at the Sydney Botanic Gardens.

A botanical description was a standardised methodology for the naming of plants and botanical material. This relied on the acknowledgement of a community of scientists of a

⁵ George Seddon, *The Old Country: Australian Landscapes, Plants and People* (Melbourne: Cambridge University Press, 2005), 118.

particular name for a particular plant. Recognition of a name was ratified through publication of the description in appropriate journals or books. Although classification of plants occurred many centuries before Linnaeus,⁶ it is the publication of the *Species Plantarum* that marks the official birth of botanical nomenclature.⁷ All botanical descriptions refer to the first naming point from this time, including *E. pilularis*.⁸ The standardised format used provided a primary layer of information.⁹ Botanists followed these prescribed methodologies of classifying and describing plants and this in turn allowed communication to transcend national boundaries, including different languages.¹⁰

Maiden wrote this description for a transnational audience of botanical science. By the late nineteenth century, botany had emerged from Natural History and Natural Philosophy as a discipline in its own right. Classifying and naming the plants of the world provided the structure through which all other aspects of botany developed. The methods and rules of the discipline emerged in Europe, but were used by botanists and collectors across the globe. There were certainly no demands from European science to include vernacular or Aboriginal names. As Jim Endersby has shown, colonial botanists were disciplined when they included too much local information. Joseph Hooker's botanical collector in New Zealand, William Colenso regularly had his classifications of new species overruled in England by Hooker. Colenso was interested in including Maori knowledge about plants in descriptions, but was

⁶ Anna Pavord, *The Naming of Names: The Search for Order in the World of Plants* (Bloomsbury: New York, 2005).

⁷ William T Stearn, "Nomenclatural Importance of the *Species Plantarum*," in *Carl Linnaeus Species Plantarum a Facsimile of the First Edition 1753* (London: The Ray Society, 1957), 1-5.

⁸ Linda R Berg, "The Classification of Plants and Other Organisms," in *Introductory Botany Plants People Environment* (Fort Worth: Saunders College Publishing & Harcourt Brace College Publishers, 1997), 229.

⁹ Gordon R McOuat, "Species, Rules and Meanings: The Politics of Language and the Ends of Definitions in Nineteenth Century Natural History," *Studies in History and Philosophy of Science* 27, no. 4 (1996).

¹⁰ J.C. Loudon, *An Encyclopaedia of Gardening Comprising the Theory and Practice of Horticulture, Floriculture, Arboriculture and Practice of Landscape Gardening* (London: Longman, Hurst, Rees, Orme and Brown, 1822), 134.

rebuffed by metropolitan scientists who saw the inclusion of this knowledge as superfluous. Many new species of eucalyptus were discerned by Maiden by following these rules of classification. These disciplinary requirements constrained Maiden's writing. They narrowed the capacity of the representation.

Maiden's inclusion of vernacular and Aboriginal names challenged the prescribed methodologies of metropolitan science. A clear, but perhaps crude indicator of the difference between Maiden's methods and those employed in the metropole is length. The description of *E. pilularis* in George Bentham's *Flora Australiensis* was contained within one half a page. It was sparse, representing the objective vision and visualisation of the plant by botanists. Maiden's description, on the other hand, was nineteen pages. Such a challenge marked what Roy Macleod saw as a maturing and strengthening of Australian science, making a place for itself within the transnational network.¹¹ In wresting control of a scientific method Maiden was carving a place for Australian botany as produced by Australian botanists.

The vernacular and Aboriginal names for *E. pilularis* were new knowledge about the species for the botanical audience. It was information that was important to Australians. Maiden layered this information into descriptions, adding it to the prescribed elements of this format. He justified his inclusion of these names through a desire for accuracy, preserving and reiterating names in the same way that he preserved eucalyptus material in the herbarium. He saw a methodological similarity in the collection and preservation of the plant material of eucalyptus and other information circulating about the tree.

¹¹ MacLeod, "On Visiting the 'Moving Metropolis': Reflections on the Architecture of Imperial Science."

One of the reasons that he could do this was that the *Critical Revision* was published here in Australia. Colenso also responded to the constraints of the metropole by publishing in a local journal, the *New Zealand Transactions*.¹² This meant that they had control over content, allowing both botanists to include material that would have been otherwise refused or edited out by metropolitan science. Rather than publishing directly into a book format, Maiden chose to publish in parts that could be accumulated and bound into volumes over time. This was a cost effective way of producing a voluminous work. Although he was challenging the prescribed format, this did not mean that he was writing for a purely local audience. On the contrary he expected the transnational community, which included those located in Australia, to read his descriptions and recognise his science. The publication of parts ensured that he could capitalise on the systems of exchange explored in the next chapter. This allowed him to both take up the format recognised by the discipline, but also to change it to reflect Australian needs and requirements.

Another important difference was how research for a large study was conducted in different locations. Large studies commenced in Europe tended to be constructed through the imperial map. Books such as *The Flora of British India*, by Joseph Hooker,¹³ or Henry Ridley's *The Flora of the Malay Peninsula*¹⁴ were methodologically approached through the boundaries formed through Empire building. Maiden, following the ground breaking approach of Ferdinand von Mueller's *Eucalyptographia* limited the large study by a genus peculiar within the colonial territory of Australia.¹⁵ One was concerned with the fortification of the imperial map, the other by the importance of understanding and correctly classifying a dominant local

¹² Endersby, *Imperial Nature: Joseph Hooker and the Practices of Victorian Science*, 200-08.

¹³ Joseph Dalton Hooker, *The Flora of British India* (London: Reeve & Co, 1879).

¹⁴ Henry N Ridley, *The Flora of the Malay Peninsula* (London: Reeve & Co, 1922).

¹⁵ Rod Home et al., "Introduction," in *Regardsfully Yours: Selected Correspondence of Ferdinand Von Mueller* (Bern: Peter Lang, 2006), 27.

plant. At the same time, the *Eucalyptus sp.* became the 'national genus.'¹⁶ Other species might have done just as well as the national genus – *Acacias*, or *Callestomens* for example – but it was the eucalyptus that took this pride of place in the Australian imagination.

Eucalyptus pilularis

The first piece of information in the description was the name. The name indicates a common manner of referring to this tree. One way to understand botany was to start with this name; as Simon Thornton-Wood and Stephen Jury state, the name of the plant 'is the key to the literature.'¹⁷ The name textually connects the writing and therefore the science of botany to a physical mass. In this case, a *Eucalyptus* tree that grew in forests from Yuin (Eden) along the coast to Bundgalung *country* (Tweed river district). The Latinised version of the name shifts that knowing of the plant into the specialised arena of the science of botany.¹⁸ Maiden made use of the Linnean system and reiterated earlier classifications: Smith in the *Transactions of the Linnean Society* 1797, Bentham's *Flora Australiensis* 1866 and Mueller in *Eucalyptographia* 1879-1884.¹⁹ In this case, the name and date does not provide the date and person of discovery, but it does provide a moment, amongst many others, that the eucalyptus entered the transnational information network.²⁰

¹⁶ Maiden, "Sketch of the Botany of the County of Cumberland," 370.

¹⁷ Simon Thornton-Wood and Stephen L. Jury, "Naming Your Plant," in *Science and the Garden: The Scientific Basis of Horticultural Practice*, ed. David S Ingram, Daphne Vince-Prue, and Peter J. Gregory (London: Blackwell Science, 2002), 48.

¹⁸ In the nineteenth century botany and botanists were more likely to be understood as Natural History and Natural Historians. I use the term botany in order to demarcate the work in relation to plants. Natural historians often dabbled in zoology, geology, cartography, geography and many other of the disciplines that were later developed through universities.

¹⁹ Carl Linnaeus, *Species Plantarum*, vol. 1 (*Holmiae: Impensis Laurentii Salvii, 1753*), 245.

²⁰ Gunnar Erikson, "Linnaeus the Botanist," in *Linnaeus: The Man and His Work*, ed. Tore Frangsmyr (Berkeley: University of California Press, 1994).

Linnean naming fixed the eucalyptus as part of the binominal classification system, where the name was created by the combination of genus and species.²¹ It is this system, used from 1753 until the present that acts as a base layer for universal understanding of the botanical world. This was a layer that had particular impacts on indigenous knowledge about plants. Greutner et al argue that nomenclature operates thus: 'The purpose of giving a name ... is not to indicate its characters or history, but to supply a means of referring to it.'²²

On the other hand Gayatri Spivak insists that such systems establish a normative narrative that erases otherness in deference to universality, and are at the heart of the power structure of colonialism.²³ She argues that 'great care was taken to obliterate the textual ingredients with which such a subject could cathect.'²⁴ In terms of scientific classification this was the colonial other as a palimpsest inscribed definitively as a European knowledge, an object objectified by the methods of botany. However, the illumination of the histories within this process suggests that the traces of indigenous knowledge are not completely obliterated. Maiden was enacting a reordering of indigenous understandings of environments, plants and science dependent on the inherited traditions of colonial science.

When Maiden commenced the publication of his series into volumes, he took the opportunity to write a preface that revealed a particular genealogy which shaped and constituted the position that he worked from as he approached the eucalyptus. The epigraph for this work,

²¹ William T Stearn, *Botanical Latin: History, Grammar, Syntax, Terminology and Vocabulary*, 4th ed. (Devon: David & Charles, 1992), 33-38.

²² W Greutner et al., eds., *International Code of Botanical Nomenclature* (Konigstein: Koeltz Scientific Books, 2000), vii.

²³ Gayatri Chakravorty Spivak, "Can the Subaltern Speak?," in *Marxism and the Interpretation of Culture*, ed. Cary Nelson and Lawrence Grossberg (Urbana and Chicago: University of Illinois, 1988), 280-1.

²⁴ *Ibid.*, 280.

reprinted in each of the seventy-five parts, is a quotation from Thomas Babington Macaulay, from his 'Essay on Milton.' Lord Macaulay, a British colonialist and historian of England, is perhaps most famous in postcolonial scholarship for his 'Minute on Education' from 1835.²⁵

Ages are spent in collecting materials, ages more in separating and combining them. Even when a system has been formed, there is still something to add, to alter, or to reject. Every generation enjoys the use of a cast hoard bequeathed to it by antiquity, and transmits that hoard, augmented by fresh acquisitions, to future ages.

Maiden's use of this particular passage identifies his work as part of an intergenerational science project that links itself to antiquity. Macaulay relies on antiquity, or history, to create a mindset that sees the collection of material as benign, naturalising the rights of those who work within European systems of science. The source of the hoards, colonised lands and colonised people disappear in Macaulay's account of collecting. As Linda Tuhiwai Smith argues, history 'is the story of the powerful and how they came to be powerful, and then how they used their power to keep them in positions in which they can continue to dominate others.'²⁶ This use of antiquity legitimised an incorporation of indigenous material into a colonial articulation as a resource.

The size of the work of the *Critical Revision* demanded the use of a format that facilitated consistency and capacity for future reference. In Linnaeus' work a description of a plant was usually no more than a dozen lines.²⁷ Linnaeus concentrated on describing the plant such that differences and similarities could be used to differentiate the plants. Sexual organs of plants – the flowers, stamen and pistils – were particularly important in classifying difference. This

²⁵ Homi Bhabha, "Of Mimicry and Man: The Ambivalence of Colonial Discourse," in *The Location of Culture* (London: Routledge, 1994), 87.

²⁶ Tuhiwai Smith, *Decolonizing Methodologies: Research and Indigenous Peoples*, 34.

²⁷ Linnaeus, *Species Plantarum*, Stearn, "Nomenclatural Importance of the *Species Plantarum*."

methodology was always dependent upon vision and as technologies of botanical laboratories developed so too did the detail provided in the description. Macaulay makes the point that science was constantly adding to itself: the colonial project was never complete.

The first description that Maiden published in the *Critical Revision* was *E. pilularis*. He had previously published a description of this plant as number 112 in the *Forest Flora of New South Wales*, volume four.²⁸ Maiden's motive was not to bring new information about this particular plant, but to gather plants together within the conventions of transnational science: to *add* detail and accuracy to what had been previously written. While he enumerated the species of eucalyptus in Mueller's *Eucalyptographia* as 134,²⁹ by the time that he finished *Critical Revision* in 1924, he had increased that number to 433. Each plant was described, such that different species were delineated and counted in relation to the genus as a whole. He had added 279 species to those produced in the earlier publication.³⁰ Maiden identified the variation and size of the genus in *Critical Revision*, although subsequent botanists have disputed the rigour of Maiden's work. One of the criticisms of this work is that it contains a multitude of superfluous information. Because of the size of the work, the specific use of a format facilitated consistency and capacity for future reference.

The format used by Maiden for the *E. pilularis* description included subheadings that followed this sequence: 'Description', 'Synonyms', 'Range' and 'Affinities.' Although the entire piece was called a description, the first sub heading, 'Description' repeats this

²⁸ Joseph Maiden, *The Forest Flora of New South Wales*, 8 vols., vol. 1-8 (Sydney: William Applegate Gullick, 1904-1925), Vol 4, 4.

²⁹ ———, *The Useful Native Plants of Australia (Including Tasmania)*, 176.

³⁰ Ferdinand von Mueller, *Eucalyptographia: A Descriptive Atlas of the Eucalypts of Australia and the Adjoining Islands*, 10 vols. (Melbourne: John Ferres, Govt. Printer, 1879).

terminology such that recognition of the plant as belonging to the patterns of European science preceded all other information about this eucalyptus. 'Synonyms' collated references to other eucalyptus. This was the section where the rivalry between scientists was displayed, demonstrating the authority and accuracy of who could recognise what. 'Range' was the place within the text that Maiden locates eucalyptus within the imperial geographic map. 'Affinities' was the section where the eucalyptus closely related to that particular eucalyptus species were described, demonstrating the interrelationships between plants of the same species.

Joseph Maiden's descriptions of indigenous plants functioned as inscription devices for scientific knowledge. According to Bruno Latour and Steve Woolgar, an inscription device is

any item of apparatus or particular configuration of such items which can transform a material substance into a figure or a diagram which is directly usable by one of the members of the laboratory.³¹

In framing Maiden's taxonomic work as a process of inscription, such detailed accounts also created the conditions in which the eucalyptus was made into a 'moment of truth' for botanists.³² The Sydney Botanic Gardens laboratory, like any laboratory, was a place in which the cultures, natures and politics of colonial life became entangled within the sciences that were produced therein.³³ Eucalyptus *and* their laboratories *and* their botanists all became

³¹ Bruno Latour and Steve Woolgar, *Laboratory Life: The Construction of Scientific Facts* (Princeton, N.J.: Princeton University Press, 1986), 51.

³² Latour, *Pandora's Hope: Essays on the Reality of Science Studies*, 53.

³³ See Donna Haraway, *The Haraway Reader* (New York; London: Routledge, 2004), Donna Haraway, *Modest Witness@Second Millennium.Femaleman Meets Oncomouse: Feminism and Technoscience* (New York; London: Routledge, 1997), Donna Haraway, *When Species Meet*, Posthumanities (Minneapolis: University of Minnesota Press, 2008), Franklin, "Colony.", Whatmore, *Hybrid Geographies: Natures Cultures Spaces*, John Law, "On the Methods of Long-Distance Control: Vessels, Navigation and the Portuguese Route to India," in *Power, Action, and Belief: A New Sociology of Knowledge?* (London ; Boston: Routledge & Kegan Paul,

more durable or conspicuous in relation to a particular transnational community of scientists through the creation of this particular inscription device. This depended on the collection of eucalyptus, eucalyptus material and eucalyptus information from urban and rural, desert and coastal, rainforest and wetland environments variously from Dharug, Kamilaroi, Bundjalung or Wiradjuri *country*.³⁴

Unlike many of the other species that Maiden described in the *Critical Revision*, Maiden begins the *E. pilularis* description briefly:³⁵ '*Operculo conico medio constricto longitudone calyces, umbellis lateralibus, fructu globoso foliis lineari-lanceolatis.*'³⁶ In other words, he opened his writing of an indigenous tree with the language of European science of the seventeenth and eighteenth century – Latin.³⁷ To that extent, not only was the name Latinised, the first words used to describe the plant belong to this other language. Latin functions scientifically: it was part of the baggage one carried in order to be seen as 'of science.' William Stearn argues that Latin was used to facilitate the exchange of ideas within a very specific community of educated European males, and in the process excluded access for the uneducated, the non European and females. In other words, it was based on the race (white), sex (male) and class (middle/upper) of the scientists.

The use of botanical Latin acknowledged the disparate nationalities of scientists from the mid seventeenth century and the attempt to make travelling information stable and readable in

1986), Devleena Ghosh and Stephen Muecke, "Introduction: Oceanic Cultural Studies," in *Cultres of Trade: Indian Ocean Exchanges* (Newcastle Cambridge Scholars Publishing, 2007).

³⁴ *Map of Aboriginal Australia* (Canberra: Aboriginal Studies Press, 1994)

http://www.aiatsis.gov.au/aboriginal_studies_press/aboriginal_wall_map/map_page viewed 6 August 2007.

³⁵ More often the Latin description was between 300-600 words.

³⁶ Maiden, "Part 1 No.1 Eucalyptus Pilularis (Smith)," 26.

³⁷ Stearn, *Botanical Latin: History, Grammar, Syntax, Terminology and Vocabulary*, 33-38.

many different places. A Latin name connected readers to a common referent regardless of the distance that might separate readers. These attempts at accuracy were designed to enable the Swedish botanist Linneaus to access information from disparate locations. This in turn created botanical descriptions that could be read in the *Species Plantarum* and understood in Russia, Java and Australia. Maiden used Latin descriptions unevenly across the *Critical Revision*. By the turn of the twentieth century Latin no longer held the exclusivity in science that it once had. It was no longer confined to gender and class as university education was becoming more widely available. Nevertheless Latin was used by Maiden to connect this work with a body of knowledge beyond the borders of Australia.

At this time, scientific descriptions had not reached the level of uniformity that one might see in such documents in the early twenty-first century. The two key references that Maiden used when he was working on the eucalyptus demonstrate the different approaches to writing for a scientific audience. George Bentham's *Flora Australiensis* captured the *E. pilularis* in the short format.³⁸ The only point of this description was to establish its difference from other species. In this way the brevity of information created a document of pure science. Such succinctness relied on a smaller vocabulary and could then be recognised within a transnational community. Readers may not have had the multilingual skills to read the first language of the author. Maiden wrote in Latin and English, as did Bentham, but the expectation was that botanists specialising in eucalyptus work may be located in Germany, or California. This system gave the description of eucalyptus transnational currency.

³⁸ George Bentham, "E. Pilularis," in *Flora Australiensis* (London: Lovell Reeve & Co, 1866), 208-09.

However, there was another way of doing things. Maiden's second authority in describing eucalyptus was Mueller who took a different approach to that of Bentham. Mueller had been very active in Victoria in establishing the usefulness of Australian plants to commerce and industry within that colony. One place where we can see his extraordinary presence in this regard ³⁹ was the publication of *Australian Vegetation, Indigenous or Introduced, Considered Especially in Its Bearing on the Occupation of the Territory, and with a View of Unfolding Its Resources*. He maintained a professional interest in the usefulness of plants to colonial development throughout his career. He advocated for the functional use of plants to benefit his community. For example, when he penned *Eucalyptographia* he pushed out the boundaries of this writing so that it included his ideas about the use of eucalyptus. Maiden followed Mueller's methods rather than Bentham's, reinforcing the importance of the locally placed scientists' authority on local species. While the tailored description expected within scientific circles can be extracted from the boarder document, it is the extra material that makes this description Australian. To that extent, the description reflects the importance placed upon the production of local knowledges.

Eucalyptus belonged to a system larger than that of Australia; it belonged to the world of botany. ⁴⁰ Through its textual location – as the opening statements about the plant – transnational science was hierarchically situated as superior to other knowledges about the plant. Of the *E. pilularis*, Maiden names the Great Blackbutt, the White Top, Flintwood, Yellow Stringybark, Messmate and Stringybark as vernacular names. However, his use of vernacular names had another effect. The juxtaposition of vernacular and scientific follows

³⁹Ferdinand von Mueller and Ferdinand von Mueller, *Australian Vegetation, Indigenous or Introduced, Considered Especially in Its Bearing on the Occupation of the Territory, and with a View of Unfolding Its Resources*, Intercolonial Exhibition Essays (Melbourne: Blundell & Co., 1867).

⁴⁰Mueller, *Eucalyptographia: A Descriptive Atlas of the Eucalypts of Australia and the Adjoining Islands*, George Bentham, *Flora Australiensis: A Description of the Plants of the Australian Territory* (London Lovell Reeve, 1866.).

the hierarchy of legitimacy, begun by opening the description with international nomenclature iterated in Latin. In classifying the Aboriginal names of *E. pilularis* after the Latin and vernacular, he was presenting names as a stage within a continuum of development. According to this system, eucalyptus were firstly science, secondly the local vernacular and lastly Aboriginal. Lynette Russell argues that it is precisely this textual juxtaposition of indigenous knowledges within western writing that constantly reiterates subservience to, and subsumption within these knowledge systems.⁴¹ Science overwrites the other, while the need to consciously preserve Aboriginal naming practices indicated that indigenous linguistic cultures were disappearing.⁴²

Great Blackbutt, the White Top, Flintwood, Yellow Stringybark, Messmate and Stringyback

The first sub group of names within the description contained 'Vernacular Names.' Scientists argued vehemently during this period that using common or vernacular names was crippling the broader project of transnationalising botanical knowledge. Rev. Dr William Woolls, a mid-nineteenth century Australian botanist, argued against the use of common names for Australian plants: 'the popular names of one district are not those of another, and that unsatisfactory as some scientific names are, they are, nevertheless, necessary, for the world at large.'⁴³ A generation later Maiden, on the other hand, always included vernacular names when ever he had access to them. Similarly, whenever he sent a request into the community

⁴¹ Russell, "Indigenous Knowledge and Archives: Accessing Hidden History and Understandings," 175.

⁴² Griffiths, *Hunters and Collectors: The Antiquarian Imagination in Australia*.

⁴³ Rev. Dr William Woolls, "Popular Nomenclature," *The Proceedings of the Linnean Society of New South Wales* 6, no. 4 (1882): 770.

for the collection of plant material he always requested that vernacular names be included along with soil type, aspect, cultivation and propagation.⁴⁴

He acknowledged the 'confusion of common names applied to Australian plants.' He argued, in defiance of the conventions of transnational science, that 'Botanists are bound by the decisions of the various International Botanical Congresses (that of Vienna, 1905, being the most important), in regard to their names, but the coiner of vernaculars is free as the air to make as much confusion as he sees fit.'⁴⁵ The trouble with vernacular information was that it caused confusion. He wrote in 1899, 'Oh, aching heads, the worries, the contradictions, the uncertainties, the giving of erroneous information, which are all directly traceable to the use of slipshod common-names in Australia!' ⁴⁶ In spite of this he persevered and included common names. Australia was a geographically vast, and for this reason, Maiden agreed that although the use of scientific nomenclature was preferred, the possibility of ensuring this within local vocabularies was limited in Australia. He argued 'People in one district look at the tint of the *bark* of a tree and call it "Blue Gum"; in another district the *wood* is looked at, and, because it is red, the tree gets the name of "Red Gum."⁴⁷ These common names were dependent on the visually produced aesthetic of the whole tree. For Maiden, the description's usefulness was extended by including information of relevance to both a national and transnational community. In fact, the national community could only be educated in the use of scientific names if they knew the trees being discussed. The vernacular name in the title, here Blackbutt, indicated the name preferred by Maiden.

⁴⁴ Joseph Maiden, "Drawings and Their Schedules," in *A Critical Revision of the Genus Eucalyptus* (Sydney: Govt. Printer, 1925), 120.

⁴⁵ ———, "Vernacular Names," in *A Critical Revision of the Genus Eucalyptus* (Sydney: Govt. Printer, 1925), 474.

⁴⁶ Maiden, "Some Exotic Grasses No.2 - *Paspalum Dilatatum*, Poir," 32.

⁴⁷ Joseph Maiden, "Notes on the Commercial Timbers of New South Wales," *Agricultural Gazette of New South Wales* (1895): 818-19.

Three justifications are given by Maiden for including vernacular names against the conventions of pure science. Maiden argued that the vastness of Australia and its scattered non-indigenous population meant that uniform local names could not be expected. This was a concession to the localness of experience of understanding and living in different parts of Australia. This was compounded, in Maiden's view, by small percentage of Australians educated in botanical names in relation to the broader community. If he stuck to the scientific name, *E. pilularis*, the value of his document was severely restricted. While it was true that many locals were interested in collecting, this did not mean that they were necessarily well versed in scientific language. Maiden was, indeed, able to draw on this resource to substantiate the herbarium, with numerous collectors providing material for comparison and review. Finally Maiden was acutely aware of the lack of availability of comprehensive botanical education. By including vernacular names he was able to clearly demonstrate the relation between them and their formal names in the hope that the former could be taken up wherever possible. Providing these links was simultaneously didactic and descriptive.

Non-indigenous belonging was consolidated in the sub-section of the description headed 'Range', which dealt with locating eucalyptus within the boundaries of Australia. When Maiden wrote the 'Range' of the *E. pilularis*, he co-located those settling and eucalyptus. Maiden, as an important figure in the Forestry network in Australia, regularly advocated for comprehensive botanical surveys to be undertaken on a national scale. This type of survey meant delineating the species within a precise area in Australia. Such surveys took into account both indigenous trees and plantation forestry as a way of analysing 'the living forest

quantitatively before subjecting it to economic reason.’⁴⁸ Maiden did his best to contribute material to such a survey and each description that he wrote included material about the eucalyptus’ range across the geographical map of Australia. He opens this section of the description thus:

Extending into Queensland on the north and to Twofold Bay on the south, from the coast up the slopes and spurs of the Dividing Range to the Table-land, but apparently not found more than 100 miles from the coast, and scarcely crossing on to the western slope in any place.⁴⁹

The identification of the locations of *E. pilularis* contributed to a botanical survey, helping to build a picture of forestry vegetation in New South Wales.

As Maiden broke the locations of *E. pilularis* into regional sites, he provided more details about exact places that the tree could be found. In Victoria, for example, it can be found ‘in a forest near Mount Macedon (C.Walter).’⁵⁰ Through the inclusion of ‘C.Walter’ directly following the location of the tree, Maiden created a double location, that of the indigenous tree and the placement of an Australian immigrant. As Spivak argues in relation to Imperial Indian history: ‘what is one narrativization of history was seen not only ‘as it really was’ but implicitly ‘as it ought to be.’⁵¹ In spatially locating new comers and eucalyptus together, Maiden not only recorded the details of eucalyptus, but also projects the future stability of settler presence into an indigenous landscape. The name of the collector, Maiden argued,

⁴⁸ Quoted in Rajan, *Modernizing Nature: Forestry and Imperial Eco-Development 1800-1950*, 37.

⁴⁹ Maiden, "Part I No.1 Eucalyptus Pilularis (Smith)," 38.

⁵⁰ Ibid.

⁵¹ Gayatri Chakravorty Spivak, "The Rani of Sirmur: An Essay in Reading the Archives," in *History & Theory*, 24, no.3, (1985), 260.

'help us to trace further particulars concerning the plant in question', entangling knowledge and location with people.⁵²

Collectors and *E. pilularis* were located together in Port Jackson (Alan Cunningham); Gladesville (J.L. Boorman); Conjola (W. Heron); Stradbroke Island (F.M. Bailey); Wimmera (F. Reader); Mount Lofty (W.Gill); Rylstone (R.T. Baker); Eden (J.S. Allan); Glen Innes (Henry Deane); Mt Kembla (R.H. Cambage); Warrah Creek (Jesse Gregson) and Cottesbrook (J. H. M.).⁵³ Within this eclectic mix of places one could find an equally eclectic mix of white men located alongside the plant. This group of collectors can be broadly divided into three types of networks from whom Maiden gathered botanical knowledges. They included historical figures of natural history (Cunningham and Bailey); contemporaries of Maiden's within the Sydney scientific scene (Boorman, Bailey, Gill, Baker, Deane, and Cambage); and amateur collectors: (Heron, Reader, Allan, and Gregson). The variety of positions held by these collectors within the settler-colony (they included, explorers, bureaucrats, botanists, pastoralists, museum curators and farmers) reveal the broad range of men engaged in botanical collecting in Australia.

Yar-warrah, Benaroon, Tcheergun, Toi, Tarundea

The third subset of names within the description of the *E. pilularis* was 'Aboriginal Names.' Somewhere in the labyrinth of Maiden's work place, beyond the herbarium, he kept another kind of collection that paralleled the specimens of eucalyptus. This collection was not

⁵² Maiden, "The Desirability of Studying Eucalyptus in the Bush," 396.

⁵³ ———, "Part 1 No.1 Eucalyptus Pilularis (Smith)," 38-41.

gathered from the environment, but from other references available to the scientists. As he worked, he linked eucalyptus to the languages of another cultural system.

Yar-warrah of the Illawarra blacks according to the late Sir William Macarthur. Another New South Wales Aboriginal name was *Benaroon*. By the Aborigines of South Queensland it was known as *Tcheergun* and *Toi*

In a collection of specimens made by George Caley are three twigs which belong to this species and which are labeled as follows by him. *Tarundea* being the Aboriginal name.⁵⁴

Rather than carrying out his own linguistic fieldwork, Maiden instead relied on other people's work in this area.

He kept lists and vocabulary inventories in the library along side other botanical texts. In volume seven of the *Critical Revision* he reproduced lists created in 1846 by the explorer of Northern Australia, Captain Lort Stokes and a truncated version of R H Mathews lists of Aboriginal names.⁵⁵ The catalogue of timbers shown at the London Exhibitions of 1859 and 1861 authored by William Macarthur was another source for this collection within the collection.⁵⁶ The marginalia in Maiden's 1861 copy of this work indicated the manner in which he actively interrogated Macarthur's botanical and anthropological naming.⁵⁷ He pencilled in new names and deleted those that he found to be incorrect by comparing this work to other sources. Although no trace could be found of a master list of indigenous names

⁵⁴ *Ibid.*, 26.

⁵⁵ ———, "Vernacular Names," 482-83.

⁵⁶ *Catalogue of the Natural and Industrial Products of New South Wales, Exhibited in the School of Arts by the International Exhibition Commissioners*, (Sydney: Reading and Wellbank, 1861).

⁵⁷ The copy held in the Royal Botanic Gardens Library has a bookplate identifying this book as belonging to the 'Library of J.H. Maiden.' *Ibid.*

for eucalyptus, most of these original texts were, by then, a part of the Sydney Botanic Gardens library collection. In this way he extracted Aboriginal names from secondary resources.

Martin Nakata, in analysing the collection of Torres Strait Islander language by the linguist Sydney H Ray from 1907, argued that 'if the history of a language and its users is not factored into the theory as a primary standpoint, then any knowledge generated about it is flawed.'⁵⁸ This was clearly the case in the use of Aboriginal names within the description of the *E. pilularis*. Nakata argued that Ray's study, while centring the speaker, operated within 'their own terms of reference.'⁵⁹ Nakata reads Ray as a Cambridge scholar whose reference points were within a disciplinary framework of European academia. This produced a particular kind of knowledge as the linguists collected it from the Islands of the Torres Strait in a way that had little to do with the islanders themselves. For Maiden, writing for a transnational audience of botanical science, this was also the case.

Of the 433 descriptions of *Eucalyptus sp.* included in the *Critical Revision*, only seventeen incorporated Aboriginal Names into their format. It would be easy to conclude that indigenous knowledge was, therefore, marginal to the practices that created moving botanical knowledges. Ken Gelder and Jane M Jacobs, in critiquing the uncanny in Australia, argue that 'a supposedly 'marginal' thing can account for far more than its own marginality would suggest.'⁶⁰ The inclusion of Aboriginal names was a gesture toward an indigenous epistemology, but instead of creating the conditions where writing could capture such an

⁵⁸ Nakata, *Disciplining the Savages: Savaging the Disciplines*, 37.

⁵⁹ *Ibid.*

⁶⁰ Ken Gelder and J. M. Jacobs, *Uncanny Australia: Sacredness and Identity in a Postcolonial Nation* (Carlton, Vic.: Melbourne University Press, 1998), 31.

essence the eucalyptus work demonstrates an internal dialogue within settler culture.⁶¹ Within these descriptions, Aborigines were reduced to the names they could provide, while others settled in their place. When Maiden wrote this history into his scientific material, he did not effect this translation through contact with Indigenous peoples or the indigenous knowledges themselves. He sourced the names by accumulating second-hand knowledge from the same network that provided eucalyptus and eucalyptus material, for his *Critical Revision*.

Maiden identified five names for *E. pilularis* in the description: *Yar-warrah*, *Benaroon*, *Tcheergun*, *Toi* and *Tarundea*. Three of these names, *Benaroon*, *Tcheergun* and *Toi*, were listed without specific informants. Maiden simply states that *Benaroon* was a 'New South Wales Aboriginal name' and *Tcheergun* and *Toi*, were so named by 'the Aborigines of South Queensland.'⁶² Absent from the *E. pilularis* description text was a single named indigene, language group or a specific area of *country* from which the information travelled to Maiden. By comparison, Maiden compiled painstaking lists of individual collectors and settled places associated with eucalyptus in the vernacular. The ubiquitous Aborigines replaced the subject, rendering not only the Aboriginal name as object, but also ignoring the subjectivity and sovereignty of indigenous people and *country*. Despite this he collected the very echoes that establish an oral presence of traditional owners in *country*. Tuhiwai Smith contends that reading archival material in this manner 'accentuates not so much our demise but the degree to which indigenous peoples have retained cultural and spiritual values.'⁶³

⁶¹ Adam Gall, pers com.

⁶² Maiden, "Part 1 No.1 Eucalyptus Pilularis (Smith)," 27.

⁶³ Tuhiwai Smith, *Decolonizing Methodologies: Research and Indigenous Peoples*, 145.

Maiden's capacity to utilise various types of information in the description rested on his ability to garner knowledge from a range of informants. However, he did not seek informants from indigenous communities. Preceding his glossary, toward the end of the 1889 publication *The Useful Native Plants of Australia* he stated as a memorandum:

Hitherto the difficulties in assigning Aboriginal names to particular species has been immense. The following are some of the difficulties:-

1. Different people express in different English characters what is obviously the same Aboriginal name
2. In many cases we are in doubt as to the value of an Aboriginal's name, i.e., whether it is actually a name for the particular plant alluded to, or an appellation of some characteristic this plant possesses in common with others.
3. Aboriginals are sometimes so very willing to give names to a traveler, that rather than disappoint him they will prepare a few for the occasion.⁶⁴

In other words, Aborigines were unreliable informants. Either they were too willing to supply botanists with names, or they lacked the capacity to correctly translate from their own knowledge system to Maiden's. He articulated the responsibility for translation as indigenous peoples', not as his own. Maiden reiterates this method in the *Critical Revision*, emphasising the inaccurate translations and piecemeal availability of Aboriginal names.⁶⁵

This was clearly a struggle for Maiden, who understood how indigenous knowledge could be made useful. *The Useful Native Plants of Australia* did include a wide range of indigenous

⁶⁴ Maiden, *The Useful Native Plants of Australia (Including Tasmania)*, 646.

⁶⁵ ———, "Vernacular Names."

uses of plants, with a particularly strong representation in the section concerning food. The recognition of food plants conformed to his research requirements regarding usefulness. However, in gathering the material for this book he had encountered these problems regarding working directly with indigenous people to adapt this information. The experiences that led him to make these conclusions are not recorded. It was clear, however, that this was a methodological turning point for Maiden. From this time, he relied on the intrinsically flawed European accounts of indigenous knowledge. His reactions to the veracity of indigenous informants reflect more his own world view, than indigenous conceptions of environments. As indigenous scholar Shino Kinoshi argues, figures such as Maiden need be to considered within the context of 'the Europeans' own imperial gaze, prurient interests and ethnocentric self-regard.'⁶⁶ In naming the eucalyptus Maiden marginalised indigenous culture and centralised transnational scientific understandings of eucalyptus. One was made subservient to the other.

In his book *Heartland*, George Main discusses the role of botanical classification of plant foods as weeds in the displacement of Wiradjuri people of New South Wales. He argues that 'strategies to deliver standard products to distant markets depended on emotional and cultural distance from local species and Wiradjuri people. Intimacy threatened the colonial project to harness the land.'⁶⁷ Relations of trust and respect were crucial in creating conditions necessary for research to enter the limina between European and Aboriginal cultural difference. One of the time honoured methods for achieving this was through the development of intimate relations with particular communities. Anthropologists were developing this 'expertise' during Maiden's time. R H Mathews was closely associated with

⁶⁶ Shino Kinoshi, "'Wanton with Plenty' Questioning Ethno-Historical Constructions of Sexual Savagery in Aboriginal Societies, 1788-1803," *Australian Historical Studies* 39, no. 3 (2008): 372.

⁶⁷ Main, *Heartland: The Regeneration of Rural Place*, 170.

Gundungarra and other New South Wales groups, A W Howitt with the Kamilaroi and Spencer and Baldwin with the Arrente. While this intimacy was not a guarantee that knowledge would not be appropriated or misused, it did yield research that gave depth to knowledge.⁶⁸ In the description of *E. pilularis*, Maiden's call for objective accuracy disavows this intimacy, in favour of a proximity to transnational science. By using this methodological approach, Maiden created a distance between himself and the people whose language he sought to represent in this scientific description.

Maiden's concern in travelling out of Sydney to collect plant material involved visiting many different places with resident indigenous communities. Collecting trips, by their nature, were short term – anything from a few days to a couple of weeks. Even when Maiden went to an area to collect, he was constantly on the move, travelling along river systems, or up mountains, traversing stock routes and forestry trails, but never just stopping in one place for an extended period.⁶⁹ As Martin Thomas demonstrates in relation to R H Mathews, access to indigenous communities often relied on understanding how to request or initiate visits.⁷⁰ Denis Byrne and Paul Carter both argue that indigenous people stayed out of sight for a range of reasons.⁷¹ Maiden's transience would have precluded the sort of intimate relations necessary to conduct rigorous research into indigenous naming systems. Understanding indigenous knowledge was never prioritised in the same way as the collection of plant material of indigenous flora.

⁶⁸ Cowlshaw, *Rednecks, Eggheads and Blackfellas: A Study of Racial Power and Intimacy in Australia*, Povinelli, *The Cunning of Recognition: Indigenous Alterities and the Making of Australian Multiculturalism*.

⁶⁹ Maiden, "Notes of a Trip to the North-Central Coast Forests of New South Wales."

⁷⁰ Thomas, *The Artificial Horizon: Imagining the Blue Mountains*.

⁷¹ Denis Byrne, "Nervous Landscapes: Race and Space in Australia," *Journal of Social Archaeology* 3 (2003), Carter, *The Road to Botany Bay: An Exploration of Landscape and History*.

It wasn't that Maiden was unaware that indigenous people used and understood eucalyptus; he had detailed these relations between humans and eucalyptus during earlier work conducted for *The Useful Native Plants of Australia*. Maiden *did* know that *Eucalyptus corymbosa*, *dumosa*, *Gunnii*, *Raveretiana* and *viminialis* were used by indigenous people for the collection of manna and in some cases water from the root system.⁷² Maiden did not include adaptations of European technologies into indigenous worlds, or how eucalyptus might have been used in this regard and instead constituted the names of the eucalyptus in accordance with scientific methodology. The framing of usefulness had provided Maiden with the impetus to include broader information beyond the names in the earlier publication. The structure and methodology of the scientific description privileged the types of information that were included.

Had Maiden's methodological approach included looking to indigenous people as experts about *country* and its flora he may have come across someone like Gundungurra man Werriberrie also known as William Russell. Werriberrie's 1914 recollections of the Picton, Camden and The Oaks area within Gundungurra *country* counter the view that indigenous knowledge about eucalyptus was inaccessible. These townships are near Hill Top where Maiden collected in 1896.⁷³ Although the booklet was introduced as Werriberrie's memories of whites living in the area, included was evidence of another sort of cultural life in that place. He remembered a lifestyle that shifted between traditional hunting and travelling, working within settlement economies and co-occupation of the land. Boomerangs and spears

⁷² Maiden, *The Useful Native Plants of Australia (Including Tasmania)*, 24-27.

⁷³ ———, "Concerning Hill Top."

took their place within the camps alongside English iron axes which superseded the stone axes of other indigenous generations.⁷⁴

Although not discussed by Werriberrie, eucalyptus were also used extensively for hulls for canoes⁷⁵ and ceremonial tree carving was still undertaken during this period.⁷⁶ Camps, such as those inhabited by Werriberrie and his mob along the Byrnes Creek incorporated the local flora into housing design and construction.⁷⁷ Werriberrie was also involved in splitting local timber for posts such that he could fence the camp reserve with wire granted from the Aboriginal Protection Board.⁷⁸ Goodall argues that the reserves of this period were generally farmed as small scale cultivation plots.⁷⁹ In other words, Werriberrie's selection AR27 was actively prepared for activities that kept family on *country* whilst operating within the economic sphere of the settler-colony. It was apparent from Werriberrie's recollections that indigenous life was surviving at the turn of the century, not on a path to extinction.⁸⁰

At the rear of the pamphlet are two maps. These contemporary maps were compiled by Jim Smith for the Oaks Historical Society and demonstrate the type of counter mapping that Denis Byrne is currently developing at the NSW Department of Environment and

⁷⁴ Werriberrie William Russell, *My Recollections* (The Oaks: The Oaks Historical Society, 1914).

⁷⁵ Andrew Long, *Scarred Trees of New South Wales* (Sydney: Department of Environment and Conservation, 2005).

⁷⁶ R H Mathews and M M Everitt, "The Organisation, Language and Initiation Ceremonies of the Aborigines of the South-East Coast of New South Wales," *Journal and Proceedings of the Royal Society of New South Wales* 34 (1900): 281.

⁷⁷ This process is described in detail by Daryl Tonkin in Carolyn Landon and Daryl Tonkin, *Jackson's Track: Memoir of a Dreamtime Place* (Ringwood, Vic.: Viking, 1999), 87-90. See also Wreck Bay Community and Cath Renwick, *Geebungs and Snake Whistles: Koori People and Plants of Wreck Bay* (Canberra: Aboriginal Studies Press, 2000).

⁷⁸ Werriberrie William Russell, *My Recollections*, 4-5.

⁷⁹ Goodall, *Invasion to Embassy: Land in Aboriginal Politics in New South Wales, 1770-1972*, 75-111.

⁸⁰ It continues to survive and thrive, evident in the activities of the Gundungarra and Thurrawal Land Councils. The Sydney Botanic Gardens employ indigenous education officers while the outpost gardens at Mt Annan which incorporate a range of indigenous themes, memorials, plantings and interpretative gardens.

Conservation.⁸¹ In that project Byrnes is seeking ways to overlay the imperial map with the tracks that link places of significance to indigenous communities. Here Werriberrie's map show both settled Aboriginal reserves and paths to initiation grounds. These were not included in the map itself, but indicate that ritual and travelling remained a part of Gundungurra life in the 1890s. Indigenous life, as indicated in this short volume, was one of transculturation: the shifting between and blending of two quite distinct worlds.⁸²

Paul Carter argues that white travellers' accounts of moving through *country* also detail the asymmetrical presence of indigenous cultural landscapes and language as a presence never understood, but intimately shared. Where the occupation of land for closer settlement was precarious on a whole range of levels, indigenous presence reveals a culture for whom *country* was 'like a familiar text read aloud.'⁸³ In comparison, whites worked against the threat, danger and unfamiliarity of the place to create patterns of belonging and ownership. Carter asserts 'It was the Aborigines' spatial command of the *country* which presented the greatest threat to white interests.'⁸⁴ While white ownership was enacted through fences, emplotments, surveys, home making and land sales, writing about Australia revealed a 'conspicuous absence' of Aboriginal life and living.⁸⁵ Telling here was the inclusion of the 'Principal Uses' *E. pilularis* within this scientific description of the plant. Eucalyptus were seen for their value within the economy of settlement: as floorboards and wharf pylons, as fencing posts and pavement mosaics. They were recognised for their exploitation within

⁸¹ Denis Byrnes, "Counter-Mapping: New South Wales and South East Asia," *Transforming Cultures eJournal* 3, no. 1 (2008).

⁸² *Ibid.*

⁸³ Carter, *The Road to Botany Bay: An Exploration of Landscape and History*, 337.

⁸⁴ *Ibid.*, 335-6.

⁸⁵ This is the point from which Mark McKenna starts his history of the Eden-Monaro area in order to demonstrate that Aboriginal presence co-existed with that of white settlers and indeed the two cultures blended together at many points. McKenna is primarily concerned with showing how previous historians have actively participated in the cult of disremembering. McKenna, *Looking for Blackfellas' Point: An Australian History of Place*.

settlement life as hardwood timbers and for their potential as an export crop, rather than being seen as part of a larger ecology of indigeneity.⁸⁶ What does not appear in the writing about this eucalyptus was the myriad of ways that they were being used by indigenous people during this period.

Maiden did engage informants in the discussion of *Yar-warra* and *Tarundea*. In the place of a direct relation between Maiden as anthropological collector and Gundungurra people, Maiden used two white informants. Sir William Macarthur provides *Yar-warra* courtesy of the Illawarra blacks. Macarthur was the son of Elizabeth and John and resident at Camden, from 1822 until his death in 1882. If Maiden did live with the Macarthurs in 1881, then Maiden may have discussed these matters with Macarthur himself, in addition to relying on his publications. Macarthur had curated the exhibition of timbers for the Paris Exhibition of 1855 and the London Exhibition of 1862.⁸⁷ Camden Park, the colonial seat of the Macarthur family, was marked in the writing of the eucalyptus as belonging, as a place of settling. Authority, in matters eucalyptus, was located with this colonial figure.

Interestingly, the earliest version of the catalogue written by Macarthur retains the diacritic symbols that direct the reader to a semblance of the pronunciation of indigenous words. Macarthur's Ngàõuli, Barrëmma and Courànga became Ngaouli, Barrema and Couranga in the later edition of this work in 1862. As Maiden transferred this information to the description he rendered the words closer to English than Macarthur. Anglification of the words occurred as they travelled further from their aural *country*; it was also a consequence of

⁸⁶ *Eucalyptus pilularis*, Blackbutt, is now extensively grown as a plantation timber to supply the building and construction industry in Australia.

⁸⁷ Joseph Maiden, "Part 48 No. LXI *Eucalyptus Paniculata* Sm.," in *A Critical Revision of the Genus Eucalyptus* (Sydney: Govt. Printer, 1922), 229.

being written into these transnational formats of botanical science. As the above memorandum suggested Maiden was critical of the variance that the reproduction of indigenous words in English caused. He was unaware of how his own act of translation reproduced the same affect.

George Caley was long gone from Australia by the time Maiden took up the project of describing *E. pilularis*, having died in Bayswater, England in 1829.⁸⁸ He had lived in Sydney between 1800 and 1808, where he was employed by Joseph Banks as a botanical collector at 15s per week.⁸⁹ As a botanical traveller through the *country* surrounding the Sydney region, Caley left a full range of botanical documents that Maiden was able to access. Herbarium specimens, journals of his travels, notebooks inscribed during the travelling process and correspondence with Joseph Banks, the Royal Botanic Gardens, Kew and Robert Brown of the British Museum. Caley's collection of eucalyptus, eucalyptus material and eucalyptus information brought him into direct contact with indigenous people of the Sydney area, who acted as guides and informants on his botanising trips.⁹⁰

Caley's use of indigenous knowledge was apparent in the parrying between his own knowledge of the local area and that of his informants. In the description for *Eucalyptus mundijongensis*, which appears in Volume five of the *Critical Revision*, Maiden quotes Robert Brown in relation to George Caley's eucalyptus collecting:

⁸⁸ Joan B. Webb, *George Caley: Nineteenth Century Naturalist: A Biography* (Chipping Norton, N.S.W.: Surrey Beattie, 1995).

⁸⁹ R. Else-Mitchell, 'Caley, George (1770 - 1829)', *Australian Dictionary of Biography*, Volume 1, (Melbourne: Melbourne University Press 1966): 194-195.

⁹⁰ Letter from George Caley to Joseph Banks, December 28 1801, in Royal Botanic Gardens, Kew, AJCP M730, 64-65.

Mr Caley has observed in this limits of the colony of Port Jackson nearly fifty species of Eucalyptus of which are distinguished and have proper names applied to them, by the native informants *who, from the differences in the colour, texture and scaling of the bark* (the italics are mine), and in the ramification and general appearance of these trees, more readily distinguish them than botanists have yet been able to do. (Robert Brown in Flinders "Voyage to Terra Australis" ii, 545, 1814).⁹¹

Maiden gives no indication as to *why* he has used italics to problematise this part of Brown's text. Colour, texture and scaling of bark were all methods used in the classification of plants by botanists, educated in Europe. What he highlighted in this passage was a point of similarity between the two cultures. While this might have led Maiden to seek interaction with local people in the manner that both Macarthur and Caley demonstrate, there were no records to suggest that this was the case for *E. pilularis*.

Maiden used the herbarium specimens of *E. pilularis* collected in 1805 and 1808 to extract and re-articulate the Aboriginal names provided by Caley. Maiden notes in his comments about the *Tarundea*, 'I only know a single tree of it, nor do the natives know of any other.'⁹² In both cases, Macarthur and Caley; *Yar-warrah* and *Tarundea*, Maiden articulates the superiority of white knowledge. Dead white men connected to the transnational scientific community carried more authority than Gundungurra people. This is partly evident in the small space that Maiden dedicates to this knowledge within the description. Five lines contain

⁹¹ Joseph Maiden, "Part 50 No. CCLXXXVI E. Mundijongensis Maiden," in *A Critical Revision of the Genus Eucalyptus* (Sydney: Govt. Printer, 1922), 308.

⁹² Maiden, "Part 1 No.1 Eucalyptus Pilularis (Smith)," 27.

'Aboriginal Names', while scientific and vernacular knowledges were littered throughout the description. Textually, Aborigines hover ghostlike within the inscription of *E. pilularis*.⁹³

The constant measuring and marking of the names across the map of New South Wales serves an unintentional end. Within this one description, of one eucalyptus (out of the 433 that he describes), Maiden demonstrates five indigenous names and six vernaculars. Whilst acknowledging the possibility of misinformation, what Maiden was inadvertently evidencing was variance of language within the Australian environment. The Aboriginal and vernacular names defy a singular transnational code, instead demonstrating the richness and diversity of asymmetrically empowered, co-existing cultures.

Late in the project, Maiden lamented 'We have merely scratched the surface as regards the distribution of our indigenous plants.'⁹⁴ In the final volume prepared by Maiden,⁹⁵ he took the time to reflect on the practices and methodology of the *Critical Revision*. He devotes one section of this exposition to his use of Aboriginal names. With his career, and indeed life, almost at an end, his certainty about indigenous matters was not resolved, but unsettled. He writes:

I am unable to ask my readers to believe that the Aboriginal knowledge of Eucalyptus was (or is) profound, for I have no evidence of it. I have endeavoured to attach names to species to the best of my ability. It is further regrettable that, in many districts, by

⁹³ Gelder and Jacobs, *Uncanny Australia: Sacredness and Identity in a Postcolonial Nation*, Andrew McCann, "The Savage Metropolis: Animism, Aesthetics and the Pleasures of a Vanished Race," *Textual Practice* 17, no. 2 (2003), Andrew McCann, "The Obstinacy of the Sacred," *Antipodes* 19, no. 2 (2005).

⁹⁴ Maiden, "The Curving Boundary," 108.

⁹⁵ Volume eight was prepared by Richard Cambage and William Blakely posthumously, so that the work would appear complete. The style of description is vastly different in that volume.

the time the white man had begun to possess more than a superficial knowledge of the Eucalypts, the Aborigines had died out.⁹⁶

On the one hand he was emphatically stating that Aborigines had died out; on the other ambiguity, or anxiety is evident in the 'was (or is)' part of the statement.

Dispossession relied on a historical possession of the land that sublimated indigenous knowledge, this being represented by the 'was' in the statement. However, the '(or is)' indicated Maiden's uncertainty about whether extinction *was* really a matter for history. The tentative '(or is)' ambiguously acknowledged that Aboriginal people hadn't died out. In other words, despite his efforts to overwrite *country*, he had to, in the end, concede that there existed knowledge about eucalyptus in the 1920s that he knew nothing about. However by reiterating the 'facts' of extinction 'in many districts', he stops short of saying that he may have missed out on acquiring this information.⁹⁷ After 25 years of confidently erasing embodied indigeneity at the same time as he collected from their environments, his confidence was lost on this issue as he set about finishing off this project. Eucalyptus wavers here between settlement land and indigenous *country*.

The context in which Maiden operated facilitated his methodological decision to ignore indigenous informants: he was a man of his time. Nevertheless this was a part of the cultural machine of dispossession. Maiden was not responsible for dispossession, but he was complicit in its production and processes. Indigenous primitivity was written into this botanical work. This was presented as normal. It was a small, but important contribution to

⁹⁶ Maiden, "Vernacular Names," 480.

⁹⁷ Thanks to Adam Gall for helping me to tease out this argument.

the idea that the land was available for settlement. Whites were the individuals who peopled the landscape, whose knowledge about the eucalyptus were valued within this description. This indicated a breakdown in cross-cultural contact. Although the desire to gather indigenous names was clearly present, Maiden's methods – of travelling, of gathering information and of writing fed a situation that was inevitably colonial. This was a re-signification of the land, making this piece of science writing 'both sign and tool of a colonial power bound to its site'⁹⁸, presenting white presence as natural. As Jill H Casid argues in the case of picturesque aesthetics in *Sowing Empire*, this sort of rendering of plants and people meant 'the application of devices...(that)...re-presents transplantation not as a violent relandscaping but as organic outgrowth in harmony with the place.'⁹⁹ The association between settlement and trees was naturalised and dispossession disappears in the process.

The question that remains unanswered in this chapter is that of Maiden's intent when he included Aboriginal names after the vernacular and the scientific. Maiden gave no definitive answer in his writings as to what he intended. Was he simply following his predecessors, Caley, Cunningham and Mueller? Was this a way of establishing an antiquarian past for eucalyptus? Was he actively empowering white knowledge by making indigenous knowledge subservient to it? Was he responding to a prevailing cultural climate that was constantly reiterating the difference and savagery of indigenous language? He justified his inclusion of indigenous names through a desire for accuracy, preserving and reiterating names in the same way that he preserved eucalyptus material. However the effect of writing can never be contained by the intent of the author. Maiden's inclusion of names serves as evidence of a process of overwriting of indigenous knowledges by transnational botanical knowledges.

⁹⁸ Jill H Casid, *Sowing Empire: Landscape and Colonisation* (Minneapolis: University of Minnesota Press, 2005), 8.

⁹⁹ *Ibid.*, 9.

Maiden's descriptions of eucalyptus aimed at purifying the scattered and fragmented eucalyptus material; what he actually generated was a work of translation whereby his own agency became intertwined with that of the plant. The Sydney Botanic Gardens wrote the inter-relations of colonial culture and indigenous knowledge through the plants that appear in *A Critical Revision of the Genus Eucalyptus*. At the moment he described eucalyptus, he inscribed *Eucalyptus sp.*, and at the same time he also inscribed settling.

The production of knowledges about eucalyptus contributes an historical understanding of land as available to white Australians and inhabited by indigenised locals. Nakata has argued that 'these knowledges, both historical and current, still contribute to the shape and form of both popular understanding and intellectual understanding of what it has meant historically and what it means to be a Torres Strait Islander.'¹⁰⁰ Indigenous Barrister Tony McAvoy points out that water rights were taken up by settlers under the *Water Act 1912* within a political environment that excluded the participation of indigenous people. The activities of the past were ramified in the conversion of water licenses in the *Water Management Act 2000* where indigenous people still had no access to these rights.¹⁰¹ The archive of eucalyptus knowledges created by Maiden cannot be considered as purely belonging to his time – the 1890s to 1920s. They continue to contribute to the institutional work of the Sydney Botanic Gardens and its relationship with Australian land as scientifically understood and owned within modern tenure systems. The herbarium, library, gardens and laboratories of the Royal Botanic Gardens Sydney are now oriented toward biodiversity preservation and conservation

¹⁰⁰Nakata, "Anthropological Texts and Indigenous Standpoints," 3.

¹⁰¹ McAvoy, "Water -- Fluid Perceptions."

law, which have their own problematic set of effects upon indigenous peoples continuing relations with land.¹⁰²

The main purpose of the practices that resulted in the description of the eucalyptus and the publication of works like *A Critical Revision of the Genus Eucalyptus* was to facilitate the movement of botanical knowledges from the Sydney Botanic Gardens. At the same time that Maiden created this type of inventory in the *Critical Revision*, the eucalyptus became an intermediary between his authority within scientific circles and his relation to Australian land and people. Constructing the description through the use of a recognised scientific format meant that eucalyptus knowledges could be moved within a larger system of transnational botanical science. The quest to enumerate and describe *Eucalyptus sp.* wrote Australia within a transnational botanical information system. While this singular specimen has been considered in this chapter, descriptions such as this were prepared for the other eucalyptus species, countless Acacias, myriad of melaleucas, numerous banksias, fungi, seaweeds, grass species and forest trees. Each time a description was published it was distributed to scientists, botanists and the general public through the transnational botanical information network. This readership was reached by mail.

¹⁰² For the debate on these types of practices from indigenous perspectives see, Michael Adams, "Foundational Myths: Country and Conservation in Australia," *Transforming Cultures eJournal* 3, no. 1 (2008), Henrietta Fourmile, "Respecting Our Knowledge: National Research Institutions and Their Obligations to Indigenous and Local Communities under Articles 8 (J) and Related Provisions of the Convention on Biological Diversity," *Humanities Research* 1 (2000), Jacqui Katona, "The Mirrar Fight for Jabiluka: Uranium Mining and Indigenous Australians," in *Echoes from the Poisoned Well: Global Memories of Environmental Injustice*, ed. Sylvia Hood Washigton, Paul C Rosier, and Heather Goodall (Lanham: Lexington Books, 2006), Peter Thompson, "From Movement to Management: Aboriginal Assertion, Government and Environmental Response and Some Ways Forward Regarding Conservation and Social Justice," *Transforming Cultures eJournal* 3, no. 1 (2008), Tim Rowse, "Actors in a Landscape," in *After Mabo: Interpreting Indigenous Traditions* (Melbourne: Melbourne University Press, 1993).

Chapter Four

Correspondence in Networks of Reciprocity

By the late nineteenth century the importance of correspondence in establishing and maintaining networks extended beyond relationships between individuals to include the vast quantities of plants, plant material and plant information held in different institutions. This chapter considers the correspondence of the Sydney Botanic Gardens, a mode of information transfer that was similarly utilised in all botanic gardens of the world and especially the Royal Botanic Gardens, Kew. Each year between 5000 and 8000 items were sent out and the same number received by the institution. The Sydney Botanic Gardens corresponded with people and institutions on local, colonial, imperial and international scales as well as with other settler colonies. Much of this correspondence ignored national boundaries and instead was built through the common desire to harness botanical knowledges to usefulness.¹ The practices developed by Maiden, the collection of material from the Australian bush and the scientific descriptions produced in the laboratories all gained momentum in the scientific world thanks to the Sydney Botanic Gardens' capacity to make them move transnationally. The mode of exchange that kept botanical knowledges in motion was reciprocity. Almost nothing was sent from the Sydney Botanic Gardens that didn't also carry the expectation of

¹ Sebouh's work on Julfan corresponding networks in the early seventeenth century between merchants suggests that these sorts of networks were always built through commonalities other than 'national' allegiance. For Sebouh this was constructed through a common ethno-religious identity in diaspora, but in this case one could think of these institutions as a diaspora of botanical science. Aslanian Sebouh, "The Salt in a Merchant's Letter: The Culture of Julfan Correspondence in the Indian Ocean and the Mediterranean," *Journal of World History* 19, no. 2 (2008).

returned plants, plant material and plant information. This pre-requisite of reciprocity ensured that an increased level of circulation also meant an increased volume of material destined for the Sydney collections. These multiple and multiplied layers of correspondence relied upon both the quality and the quantity of the collections.

When looking at the practices that Joseph Hooker engaged during his career at the Royal Botanic Gardens, Kew, Jim Endersby examined corresponding as an important scientific practice. Endersby focused on two of Hooker's long-distance relationships in particular to draw out the ebb and flow of ideas, theories, and material culture between the metropole and the colonies. Hooker corresponded, over a lifetime, with Ronald Gunn from Tasmania and William Colenso from New Zealand. Hooker met both of these men on his voyage as surgeon with the *Erebus*. Endersby tracks the challenges and changes in these relationships, which were built around collecting and sending specimens of indigenous plants. He constructs an intricate picture of the integrated production of botanical knowledges in London and the colonies, where Hooker was as dependent on his collectors as they were on him.² Building on this concept of professional practice this chapter will consider the significance of an expanded range of correspondence sent by and received in the Sydney Botanic Gardens.

Corresponding was a method of overcoming distance, so should be considered an infrastructural device, as much as the railway and shipping complex that carried material, people and culture around the globe.³ It is my argument that correspondence was the key factor in the networks that Maiden built, maintained, manipulated and accessed, enhancing

² Endersby, *Imperial Nature: Joseph Hooker and the Practices of Victorian Science*, 84-111.

³ For a discussion of hybridity shaped by shipping cultures across the Atlantic see: Paul Gilroy, *The Black Atlantic Modernity and Double Consciousness* (London: Verso, 1993).

the capacity of the Sydney Botanic Gardens to provide support for settlement. These items, books, letters, reports, journal articles, plants, specimens and illustrations were all references to the world of nature. As the process of translation was enacted, from nature to science, each item had the capacity to become a circulating reference. Bruno Latour characterises the use of references in scientific practice as

Terms from linguistics and philosophy that are used to define, not the scenography of words and worlds, but the many practices that end up in articulating propositions. "Reference" does not designate an external referent that will be meaningless..., but the quality of the chain of transformation, the viability of its circulation.⁴

By this he is emphasising two points that related to the material accumulated in the Sydney collections for science. Motion constituted the size of the network which in turn concretised and authorised the command of nature for the Sydney Botanic Gardens.

Three aspects of these correspondence networks are considered in this chapter. Firstly, how the exchange systems were stimulated through the institutional practices and systems in place at the Sydney Botanic Gardens. Secondly, the types of exchange which were important for demonstrating the global reach of the network. It will also problematise the assumptions of historians that these relations are always hierarchical, instead making a case for thinking about these correspondence networks as lateral relationships. Thirdly the manner in which these networks were put to work in building relations that interconnect the Sydney Botanic Gardens with people and places engaged in mobilising botanical knowledges. All of these elements of the corresponding networks emerge in the case studies developed in part two of this thesis. John Law argues that these are the very practices of science that get pushed to the

⁴ Bruno Latour, "Circulating Reference: Sampling the Soil in the Amazon Forest," in *Pandora's Hope: Essays on the Reality of Science Studies* (Cambridge, MA: Harvard University Press, 1999), 310.

background, when scientists speak of facts and reality. He sees this as the hinterland of scientific method. Making these hinterlands visible helps us to see the transnationalism at the heart of the work of the Sydney Botanic Gardens.⁵ This chapter makes the invisible visible and demonstrates that command of infrastructures of exchange were crucial to the colonising functions of the Sydney Botanic Gardens.

Stimulating exchange

The movement of specimens and seeds was undertaken to stimulate reciprocity. Recognised researchers, such as Professor McOwan, the Government Botanist, Cape Town sent one bag of *Pteroxylon utile* seed, while research institutions such as the Barbados Imperial Department of Agriculture were despatched sixty packets of New South Wales seeds.⁶ Similarly, in 1899, G A Bolton, from Crystal Creek in Northern New South Wales was sent the seeds of *Trifolia Johnsoni* and the Sydney Botanic Gardens received the ripe fruits of *Aegle marmelos* (Bengal Quince) from Anthelme Thozet of Rockhampton.⁷ In 1900, Mr Chas Walter of Melbourne sent specimens and a note on the *Eucalyptus Kruscasa* (sic). In return, Botanical Assistant Ernest Betche sent a small packet of plant material, probably seeds, lamenting the fact that he could not be more generous, since the collecting season was just beginning. The Aphelias also sent at the same time by Walter were deemed rare in New South Wales, and as such Betche encouraged his correspondents collecting ventures by the volume and quality of his own gifts.⁸ Each time one of these items went into the mail, the potential for exchange was also sent with it. Some of this mail went to individuals, others to long time correspondents of the institution.

⁵ John Law, *After Method: Mess in Social Science Research* (Oxon: Routledge, 2004), 27-32.

⁶ Maiden, "Report on Botanic Gardens and Domains for Year 1899," 11.

⁷ *Ibid.*, 12-13.

⁸ Letter from J H Maiden to Chas Walter, Melbourne, 2 August 1900, RBGS, Copies of letters sent re plants and seeds despatched, 1900-1907, SR NSW 19/17189.52.

The structure of the exchange networks was well established by 1896. All earlier curators and directors exchanged botanical knowledges. Charles Moore, John Carne Bidwell and Charles Fraser all transferred letters, plants, plant material and plant information to other botanic gardens and individuals engaged in botanical pursuits. Of this system, Maiden's predecessor, Charles Moore reported to the Select Committee inquiring into the management of the Sydney Botanic Gardens in 1855: 'The system is this – if I wish to enter an arrangement for the exchange of plants with any place – as, for instance, Hamburg – I send a case of such plants as I think may be valuable for that place.'⁹ This was an institutional practice, as can be seen in Moore's description. The paucity of records of Moore's directorship suggests that his use of this system was relatively limited.¹⁰ Maiden, on the other hand, saw this as a time honoured practice of a reputable scientific institution. He also identified this practice for the possibility it presented in enhancing the status of the Sydney Botanic Gardens. Maiden extended the reach and depth of the network because he understood how to capitalise on the reciprocity. Rather than relying simply on plants being distributed into networks requiring reciprocity, he added all other manner of plants, plant material and plant information produced in the Sydney Botanic Gardens. He actively stimulated reciprocity through his own voluminous and proactive approach to its value for enhancing the collections.

One ready made network into which Maiden sent and received material was the extensive Botanic Gardens located all over the world. Where Donal McCracken has shown the importance to the British Empire of their botanic gardens, this phenomenon was far more

⁹ Charles Cowper, "Minutes of Evidence, Select Committee on the Botanic Gardens," (Sydney: Votes and Proceedings, New South Wales Legislative Council, 1855), Q67.

¹⁰ Less attention has been given to Moore than he deserves, so this theory is untested. Much more work could be done on Charles Moore's time as the Director, particularly in regards his relations with Edinburgh Botanic Gardens. Gilbert, *The Royal Botanic Gardens, Sydney: A History 1816-1985*, 75-113.

broadly spread across the globe. Botanic gardens could be found in the French, German and Dutch colonies, as well as in countries not necessarily aligned with any particular empire such as Russia and the United States of America. Maiden took no consideration of imperial allegiances when he sent material with the expectation of returned goods. Thirty-three packets of seeds were sent on the 4th June 1902 to the Director of the Botanic Gardens of the Imperial University, St Petersburg, Russia;¹¹ forty packets to the Kolonial Museum, Haarlem, Holland on the 14th June;¹² fifty-five packets to the Botanic Gardens au Parc de la Têtê d'or, Lyon, France on 17th June; ¹³145 packets to the Regius Keeper, Royal Botanic Gardens, Edinburgh, Scotland, also 17 June 1902;¹⁴ thirty-two packets to the Botanic Gardens at Utrecht, Belgium on 20th June 1902.¹⁵ Seeds and plants went to Rome, Argentina, New York, Hong Kong and Java through a process that worked through ad hoc botanical connections rather than recognition of political boundaries.

Maiden's own publications were used as a part of this process. On August 1904 Maiden requisitioned 1000 copies of Part VI of *A Critical Revision of the Genus Eucalyptus* to be distributed at his discretion. This represented a cost to the institution of £30, but it was also a substantial investment.¹⁶ The capacity to send material like these publications was a way of sustaining and stabilising transnational networks. When Maiden could send this material, it put him in a position of debt which he could claim in other ways – advice, loan of specimens,

¹¹ Letter from J H Maiden to Imperial University, St. Petersburg, Russia, 4 June 1902, RBGS, Copies of letters sent re plants and seeds despatched, 1900-07, SR NSW 19/17190.602.

¹² Letter from J H Maiden to Kolonial Museum, Haarlem, Holland, 14 June 1902, RBGS, Copies of letters sent re plants and seeds despatched, 1900-07, SR NSW 19/17190.604.

¹³ Letter from J H Maiden to Botanic Gardens au Parc de la Têtê d'or, Lyon, France, 17 June 1902, RBGS, Copies of letters sent re plants and seeds despatched, 1900-07, SR NSW 19/17190.605.

¹⁴ Letter from J H Maiden to Royal Botanic Gardens, Edinburgh, Scotland 17 June 1902, RBGS, Copies of letters sent re plants and seeds despatched, 1900-07, SR NSW 19/17190.606.

¹⁵ Letter from J H Maiden to Botanic Gardens Utrecht, Belgium, 20 June 1902, RBGS, Copies of letters sent re plants and seeds despatched, 1900-07, SR NSW 19/17190.608.

¹⁶ Requisition form, 3 August 1904, RBGS, Correspondence Files (Herbarium), 1907-1948, SR NSW 8/262.

plant seeds and seedlings, and introductions. Reciprocity was easy to trace when it consisted of written correspondence, this, however, was an entirely different category of sent material that relied upon chance. This was a deliberate way of seeding new tendrils in the transnational networks of botanical knowledge. A recipient of a part of the *Critical Revision* may respond with an acknowledgement or with a publication from their own institution which was added to the library. A flow of gifts of specialist knowledge established the credentials of the Sydney Botanic Gardens as a place of expertise, a centre to be consulted in the matters of botany in Australia.

The importance of publications for stimulating correspondence was evident in the approach made by Dr W W Stockberger. A physiologist in charge of Drug, Poisonous and Oil Plant Investigations, he read Maiden's note in the 1921 *Agricultural Gazette* about Larkspurs¹⁷ and was prompted to write to Maiden and send a copy of a bulletin produced by the United States Department of Agriculture on the same topic.¹⁸ Miss Hoffman, a gardener from Trangie, sent Maiden some samples of pink and blue Larkspurs with a note pointing out how poisonous they were. Maiden asked for more information from her and then published an extract of her letter in the *Agricultural Gazette*. The poisons seemed only to affect insects, which Maiden supported by referring to a range of entomological findings, but evidence was contradictory regarding sheep. He left the question open and asked correspondents to contribute to this debate – hence Stockberger's letter. The bulletin Stockberger sent was 'Larkspur Poisoning of Live Stock' and Maiden responds, with thanks, but also with a promise to publish a 'note' in the *Agricultural Gazette*. What Stockberger pointed out was that

¹⁷ Joseph Maiden, "The Larkspurs as Poisonous Plants," *Agricultural Gazette of New South Wales* 32 (1921): 326.

¹⁸ Letter exchange J H Maiden and Dr W W Stockberger, 1921, RBGS, Correspondence Files (Herbarium) 1907-1948, SR NSW 8/262. 2525.

It has been definitely established that certain of our American species of Larkspur are very poisonous to cattle, but careful and extended experiments made with sheep give us every reason to believe that sheep are never injured by feeding on Larkspur.¹⁹

In this way the corresponding relations, accompanied by an exchange of information, kept the institution abreast of the latest research in this area. Maiden, understanding the importance of such matters to his primary target audience, those in rural industries, disseminated this material with the authority of the Sydney Botanic Gardens. The Bureau of Plant Industry of the United States Department of Agriculture corresponded with Maiden from 1907 to 1921. This exchange was often accompanied by requests for publications on topics that were being covered by each institution. Plants dangerous to stock, weeds, the cultivation of plants as economic botany and the success or failure of introduced species allowed comparisons between the two sites.

Maiden was similarly able to stimulate correspondence through following up on published articles. Upon reading a review of his *Critical Revision* in the journal *Nature* by the English botanist and keeper of the Royal Herbarium of Kew W Botting Hemsley, Maiden wrote to the author. He didn't just send a letter however; he also took the opportunity to send copies of parts of the book, which he discerned Hemsley was missing from reading the review. This prompted Hemsley to write back to Maiden, offering for sale, as a whole, a group of pamphlets, manuscripts and books on insular floras. Offered for £25, Maiden justified this expense by arguing that information about local regional islands of the Pacific were better located in Sydney than in London. Subsequent to this purchase, Hemsley then sent donations

¹⁹ Letter exchange J H Maiden and Dr W W Stockberger, RBGS, Correspondence files (Herbarium) 1907-1948, 1921, SR NSW 8/262. 2525.

of *Index Florae Sinensis* and *The Flowering Plants of Tibet*. Professional bonds established through letter-writing initiated the delivery of goods to various parts of the Sydney Botanic Gardens collections.²⁰

One important avenue that Maiden pursued in stimulating exchanges was in the distribution of catalogues of material held or available to the Sydney Botanic Gardens. The earliest such list in the Sydney Botanic Gardens was compiled during Charles Fraser's superintendency in 1828. It was entitled 'List of esculent vegetables and pot herbs cultivated in the Botanic Gardens, Sydney December 1827.'²¹ However, other catalogues are also compiled during both Charles Moore 1848-1896²² and Joseph Maiden's 1896-1924²³ directorships'. These catalogues were used both locally as guides to the gardens, and they also served the function of delimiting a living collection. It presented the contents of the place, replicating in part the role of the Flora by attaching plants to a particular territory. Australian botanists were already familiar with the territorial function of Floras. A catalogue draws this work to a local level, specific to local place.²⁴

In addition to this function, catalogues stimulated exchange as part of a fluid transnational network. For example, a catalogue of plants from a botanic gardens in India, informed directors in Australia of plants that may grow favourably in either region. Although the catalogues were static documents, they functioned within these networks as conduits of

²⁰ Letter exchange between J H Maiden and W Botting Hemsley 1921-22, RBGS, Correspondence files (Herbarium) 1907-1948, SR NSW 8/262.3281.

²¹ Charles Fraser, List of Esculent Vegetables and Pott Herbs Cultivated in the Botanic Gardens, Sydney, 1827, RBGS Special Collection, Series B1.

²² Charles Moore, A Census of the Plants of New South Wales, 1884, in Royal Botanic Gardens Library.

²³ B Jones, Plants in Botanic Gardens Sydney 1894-5, in RBGS Library Special Collections, MS580.8R.

²⁴ Some of the ideas contained in this chapter have been published in my article about the mobility of mangoes. See Jodi Frawley, "Making Mangoes Move," *Transforming Cultures eJournal* 3, no. 1 (2008).

information about the viability of plants. In the notice preceding the 1866 *Catalogue of the Sydney Gardens* it states as the purpose: 'to offer such information as is necessary to secure advantageous system of exchange with Botanists and Horticulturalists of other Countries, to whom both the possessions and wants of this Establishment will thus be made obviously apparent.'²⁵ In this way, the catalogue became a means of transferring information about the viability of growing particular plants within a range of comparable environmental conditions.

In 1884, Charles Moore created a census of the plants of New South Wales²⁶ and had the list published into a small, bound volume. His successor, Joseph Maiden reprinted this volume and sent it out into the network. How many he sent, or to whom he sent them, is unknown. However, six of these volumes survive in the Sydney Botanic Gardens' collection and demonstrate how the botanists of Museo Nacional de Beunos Aries, Buitenzorg, Java and University of California Berkeley, California, USA, used these documents to compare to their own collections. The catalogues were marked to show which species were desired and returned to Maiden. Maiden then used these documents to prepare shipments of plant material to these places. Ernest Betche wrote to Dr L Radlkofer of the Botanical Museum in Munich:

I have pleasure in sending you by this week's mail 100 species of NSW plants mostly your desiderata but as the parcel has been made up partly before we received your marked Census it contains some species already represented in your herbarium.²⁷

Information travelled backward and forward through these channels enabling plants to move from India to England to Sydney, and then on to South America, Indonesia and the USA.²⁸

²⁵ *Catalogue of Plants in the Government Botanic Gardens Sydney, 1866, New South Wales, in RBGS Library.*

²⁶ Charles Moore, "A Census of the Plants of New South Wales," 1884 in Royal Botanic Gardens Library.

²⁷ Letter from Ernest Betche to Dr L Radlkofer, Botanical Museum, Munnich, 11 August 1900, RBGS, Copies of letters sent re plants and seeds despatched, 1900-1907, SR NSW 19/17189.156.

The collection of catalogues from other countries offered directors the opportunity to source desired plant material from places beyond the respective colonial, national and empire boundaries.²⁹ In these ways the global environment was transferred from one place to the next. The cross-border adaptability of a plant was demonstrated each time a seed or seedling was accepted from Calcutta, or Trinidad, or Kew and reared in Sydney. This also demonstrated to other botanic gardens the multiple uses of exotic plants when sustained by an information system specifically developed to support the exchange of information regarding economically viable plants.

A consignment of plants could be sent with a list of desiderata rather than a catalogue. By sending desiderata, botanical institutions from elsewhere could be very specific about which plants they needed for their own gardens. In July 1901, Maiden sent ninety-four packets of seeds to 'The Gardens' at La Mortala, Ventimiglia, Italy. He listed the numbers of the plants on the packages according to the list that he had been sent.³⁰ He was able to supply thirty-one items from the list. When he sent 106 packets of seed to the Director of the Palermo Botanic Gardens, Sicily, the box accompanied a list of his own desiderata. For this to work effectively Maiden needed a good supply of New South Wales plants and command of his collections so that he could specify his needs.

²⁸ These 6 copies are shelved within the general library collection at the RBGS Library.

²⁹ These exchanges are in no way limited to the British Empire but travelled readily across boundaries creating links between places like Sydney and those as far afield as Russia.

³⁰ Letter from J H Maiden to C Hanbury, 28 July 1901, RBGS, Copies of letters sent re plants and seeds despatched, 1900-07, SR NSW 19/17190.301.

When staff deemed the exchange to lack balance, ill-will ensued. Betche wrote to the R Helms of the Agricultural College to express his resentment about having to spend so much time on specimens which would not be retained by the Sydney Botanic Gardens. He admonished Helms, saying that if the gardens were provided with duplicates then this problem would have been circumvented and he would have given them 'the proper attention.'³¹ *Quid pro quo* operated in the way that information was relayed between different departments. Betche managed his time such that the best outcomes could be attained for the Sydney Botanic Gardens. Identifying plants where there was no kick back for the herbarium was deemed troublesome.

Types of exchange

It is impossible to consider the corresponding relations of the Sydney Botanic Gardens without looking to the Royal Botanic Gardens, Kew. Histories of plant exchange often concentrate on big economic products like tea, cinchona and sugar stemming from the work of big and important botanic gardens, particularly the Royal Botanic Gardens at Kew. Since Lucile Brockway's groundbreaking work in 1979³² a number of authors have tackled the imperial role of botanic gardens. The Royal Botanic Gardens, Kew developed a system of botanic gardens within the hierarchies of the British Empire that became central to the argument of these studies. Donal McCracken³³, Richard Drayton³⁴ and Ray Desmond³⁵ all worked within the archives generated by the botanic gardens of the nineteenth century. Each

³¹ Letter from Ernest Betche to R Helms, Agricultural College, 20 August SR NSW 1900, RBGS, Copies of letters sent re plants and seeds despatched, 1900-1907, 19/17189.272.

³² Brockway, *Science and Colonial Expansion: The Role of British Royal Botanic Gardens*.

³³ McCracken, *Gardens of Empire: Botanical Institutions of the Victorian British Empire*.

³⁴ Richard Drayton, *Nature's Government: Science, Imperial Britain and the 'Improvement' of the World* (New Haven: Yale University Press, 2003).

³⁵ Ray Desmond, *Kew: The History of the Royal Botanic Gardens* (London: Harvill in association with the Royal Botanic Gardens Kew, 1998).

– in their own way – chronicled the development of botanic gardens, the network within the British Empire and the common functions of series of botanic gardens in colonial locations. Desmond even quotes Joseph Banks’ desire to see Kew as ‘the botanical metropolis of the world,’³⁶ indicating a qualified importance of Kew in relation to other botanic gardens as early as the eighteenth century. Even as they argue for the impact of the colonial knowledges in environmental thought, as Richard Grove³⁷ does, they articulate the sense that Kew was the overwhelming centre of botany and empire. A strong relationship with Kew translated into respect for the work undertaken in Sydney as well as physical enhancement of the colonial collections.

Maiden’s first corresponding task upon taking the position at the Sydney Botanic Gardens was to send a circular letter announcing his new authority. In May 1896, he announced the retirement of Charles Moore and his appointment as Director and Government Botanist.³⁸ The Royal Botanic Gardens, Kew were one of the recipients of this letter. Maiden followed this letter with a more personal note, acknowledging the importance of the connection to the largest and most influential imperial collections of plants, plant material and plant information. Maiden was no stranger to Kew, however, having developed strong ties to the institution during his time at the Technological Museum.³⁹ The Sydney Botanic Gardens was similarly a familiar organisation to Kew. Correspondence, advice, letters, books, seeds, plants and plant material transited between the two centres throughout the nineteenth century. This relationship was maintained during Maiden’s directorship. Where other correspondence was sometimes delegated to staff, Maiden ensured that the majority of letters that were sent from

³⁶ Ibid., 302.

³⁷ Grove, *Green Imperialism: Colonial Expansion, Tropical Island Edens, and the Origins of Environmentalism, 1600 -1860*.

³⁸ Cited in Gilbert, *The Little Giant: The Life and Work of Joseph Henry Maiden 1859-1925*, 167.

³⁹ Correspondence Sydney Technological Museum, 1879-1890, Royal Botanic Gardens Kew, AJCP, M784.

the Sydney Botanic Gardens were penned by him and sent to the Director at Kew, William Thistleton Dyer until 1906, and thereafter to Colonel Prain. Prain had been the Director at the Calcutta Botanic Gardens where he had also been a regular correspondent with Maiden and the Sydney Botanic Gardens. Relations such as this transferred with botanists as they moved across geographic space.

In 1901, Maiden wrote to Thistleton Dyer about his work with the genus eucalyptus. He argued that he had been engaged in eucalyptus work for fifteen years and had travelled all over Australia looking at their habitats. While at the Technological Museum this work discerned the chemical composition of eucalyptus. At the Sydney Botanic Gardens he focused on the pure science of eucalyptus. In both cases eucalyptus were regarded as economic botany. To make this shift in research he drew from the resources held at Kew, especially in confirming or establishing nomenclature. In return for any material made available to him he promised to send promptly and voluminously. In 1901, Kew presented thirty-seven herbarium sheets and sent Maiden a further forty-five regarding the eucalyptus study. Those presented to the National Herbarium were gifts, while the other forty-five were expected to be returned. In this way, Maiden both accumulated material for his collection whilst maintaining scientific rigour by examining types and original material that had to be returned.⁴⁰

Correspondence passed between Kew and Sydney throughout each year of Maiden's Directorship. All manner of plants, plant material and plant information transited between London and New South Wales. Maiden visited Kew in 1900 on his grand tour, and sent other

⁴⁰ J H Maiden to Thistleton Dyer, March 1901, Royal Botanic Gardens, Kew, AJCP M741, 160.

Australian botanists to visit as well. Emulating the success and power of Kew meant performing the same functions that they did in England. Each of the collections at Sydney – herbarium, library, museum and gardens – were also found at Kew. All of the Sydney collections benefited from the ties between the two centres. Each section of the Sydney collections boasted items of botanical knowledge that are linked back to Kew. This reciprocal arrangement also benefited the work and collections in London. Maiden ensured that despite the response to the local culture, the links to Kew were well serviced and maintained.

Anne Secord analysed botanical correspondence in order to detail the intricate social prescriptions organised within networks of exchange in England. In examining the habits and etiquette of correspondence between artisans and gentlemen she shows how one social group was distinguished from another. Botany was a place where the two classes could interact, but only within prescribed relations. She demonstrates Joseph Hooker's dissatisfaction with the requirement to answer unsolicited letters. Hooker categorised the value of correspondence according to his understanding of social status and professional hierarchy. As Endersby reinforces in his detailed discussion of Hooker's correspondence with Colenso and Gunn, letter writing in England was formal and existed within strictly ordered social and class relations.⁴¹

Maiden was aware that such hierarchies existed, but from his isolated position was not always certain as to his place within this hierarchy or how to gain access to institutions outside of Australia. When his letters to Monsieur Bureau at the Jardin des Plants elicited no

⁴¹ Jim Endersby, "From Having No Herbarium.' Local Knowledge Versus Metropolitan Expertise: Joseph Hooker's Australasian Correspondence with William Colenso and Ronald Gunn," *Pacific Science* 55, no. 4 (2001), Endersby, *Imperial Nature: Joseph Hooker and the Practices of Victorian Science*, Secord, "Corresponding Interests: Artisans and Gentlemen in Nineteenth-Century Natural History."

response, Maiden wrote to Dyer to inquire as to the correct mode of address, and requested that Dyer send a letter of introduction to Paris on his behalf. When visiting Paris in 1900, he was told by Monsieur Cornu that he had 'made a great hole in his manners' by addressing the wrong person about herbarium matters.⁴² Maiden feared that this slight of manners would block his access to the French eucalyptus specimens. On a second occasion he wrote to Dyer for information about corresponding with Kew botanist W Botting Hemsley. His desire not to offend Dyer prompted this letter, inquiring as to whether it was suitable to either write directly to Hemsley or to address such letters through Dyer.⁴³ Secord argues that 'moral integrity was essential for networks to function, for they held together only if there was mutual trust over exchanges of information and specimens.'⁴⁴ While honouring the sociability of the networks this was far from the only approach taken by Maiden. From Sydney, Maiden was, in many ways, less concerned with trust and instead emphasised fluidity and motion. The growing confidence of a nationalising science gave Maiden the scope to approach the network from a different perspective.⁴⁵

Located, as he was, at the edge of empire Maiden developed his own protocols within the broader transnational networks of botanical exchange.⁴⁶ Maiden was a great deal less finicky than Hooker and welcomed all correspondence. He treated corresponding and unsolicited letters as an integral practice of his position. This was a primary duty and an opportunity to

⁴² Letter from J H Maiden to William Thistleton-Dyer, Royal Botanic Gardens, Kew, 28 April, 1902, Royal Botanic Gardens Kew, in AJCP M741, 172-73.

⁴³ Letter from J H Maiden to William Thistleton-Dyer, Royal Botanic Gardens, Kew, 26 June, 1901 Royal Botanic Gardens Kew, M741, 163-64.

⁴⁴ Secord, "Corresponding Interests: Artisans and Gentlemen in Nineteenth-Century Natural History," 392.

⁴⁵ Libby Robin, "Ecology: A Science of Empire?," in *Ecology and Empire: Environmental History of Settler Societies*, ed. Libby Robin and Tom Griffiths (Carlton South, Vic.: Melbourne University Press, 1997), Robin, *How a Continent Created a Nation*.

⁴⁶ Tom Griffiths and Libby Robin, *Ecology and Empire: Environmental History of Settler Societies* (Edinburgh: Keele University Press, 1997), 8-9.

expand the collections and, therefore, the range and importance of the botanical knowledges therein.

As Susan Parrish argued in relation to American correspondents of the Royal Society, this distance from Europe made individuals sometimes interpret these relations as lateral rather than hierarchal. She states, 'in social composition and rhetoric, this circuit was more miscellaneous ... more intricate and sown together by subject matter than a pre-existing social sphere.'⁴⁷ This lateral aspect can be seen in the equivalence that Maiden applied to the variety of correspondence of the institution.

In order to flesh out the statistics that Maiden provided for the government each year, he sometimes provided lists of topics of inquiry from correspondents. In the 1911 report he wrote:

The following brief statement may give some idea of the miscellaneous subjects dealt with by correspondence during the year 1910:-Australian edible nuts; Poison Ivy (*Rhus radicans*) and remedies for the skin-irritation caused by it; Native flowers, plants, and seeds suitable for Britain, Europe, and the United States; Value of grasses for fodder, &c.;Plants poisonous to stock.⁴⁸

A further sixty-two topics made it into Maiden's list out of the 7915 registered items from that year. Within the lists that he supplied in various annual reports about the correspondence he makes no distinction between people and institutions seeking their botanical expertise. The

⁴⁷ Susan Scott Parrish, "Atlantic Correspondence Networks and the Curious Male Colonial," in *American Curiosity: Cultures of Natural History in the Colonial British Atlantic World* (Chapel Hill: University of North Carolina Press, 2006), 118.

⁴⁸ Joseph Maiden, "Report on Botanic Gardens and Domains, &C. For the Year 1910," (Sydney: Botanic Gardens, Sydney, 1911), 3-4.

Sydney Botanic Gardens was very proud that the collections that they maintained and developed could be utilised to answer both the simplest of questions for locals, as well as the theoretical questions of international importance.

Letters, in the traditional sense, were a part of the mix of Sydney Botanic Gardens' correspondence. Personal relations were initiated and maintained through this means. The trails of these letters often spanned a staff member's entire career. Maiden wrote to Jesse Gregson prior to his trip to the north-central coast forest in 1895. Gregson was the general superintendent of the Australian Agricultural Company at the time. This company had held a large leasehold of land north of Newcastle, 464,640 acres, since 1839 on which they experimented with sheep breeding, wheat cropping, cattle raising and in Booral, sericulture. Maiden was aware of Gregson's botanical knowledge in this area which made him the perfect contact prior to departure on the trip. Having written to Gregson, Maiden went to Karuah with descriptions of the flowering plants of the area in hand. Gregson wrote, 'The face of the rocks is covered in places with *Dendrobium Kingianum*, a perfect blaze of pick colour in the spring, or with *Thelymitra ixiodes* equally gay with its splendid blue flowers.'⁴⁹ Maiden identified these plants whilst on the trip.

Over the years Gregson and Maiden exchanged plant material, specimens, seasonal information and seeds. Gregson regularly sent specimens to the Sydney Botanic Gardens for identification.⁵⁰ In November 1897, Gregson asked for a collecting-press and was met with stony silence. Presumably the Sydney Botanic Gardens were not in a position to sell or lend

⁴⁹ Maiden, "Notes of a Trip to the North-Central Coast Forests of New South Wales," 588.

⁵⁰ RBGS, Register of letters received, October 1897- December 1898, SR NSW 19/17192.1897.3283.

one.⁵¹ On 31st August 1898, Gregson acknowledged the receipt of the 'notes on eucalypts part iii' which elicited a 'promise to send botanical specimens.'⁵² These specimens mark out a 'central component' of the exchange networks of this period, which Andrea Rusnock claims distinguish them from eighteenth century correspondence that relied almost entirely on the content of letters.⁵³

In this Maiden was able to develop a corresponding relation that allowed him to support Gregson's botanical aspirations within the constraints of his own organisation. Endersby identified the same constraints in the relations between Hooker, Colenso and Gunn. The supply of equipment, books, advice and guidance created a more rigorous botanical practice and, where distance separated the collaborators, allowed collectors to work independently.⁵⁴

Such was the importance of Gregson's contribution to the Sydney Botanic Gardens, and the regard with which he was held by Maiden, that he did not hesitate to introduce this amateur botanist to the professionals at Kew. In 1904 and 1905, two of Maiden's local collaborators, William Deane and Jesse Gregson, journeyed to England. Neither gentleman was a professional botanist. Deane was the Engineer in Chief of the New South Wales Railway Construction and Gregson was the manager of the Australian Agricultural Company. Both collected material, created notes and herbarium specimens about Australian plants and received advice, plants, seeds and publications from the Sydney Botanic Gardens. Both men

⁵¹ RBGS, Register of letters received, October 1897- December 1898, SR NSW 19/17192.1897.3351.

⁵² RBGS, Register of letters received, October 1897- December 1898, SR NSW 19/17192.1898.3225.

⁵³ Andrea Rusnock, "Correspondence Networks and the Royal Society," *The British Journal for the History of Science* 32, no. 2 (1999).

⁵⁴ Endersby, *Imperial Nature: Joseph Hooker and the Practices of Victorian Science*.

travelled to England and visited the Royal Botanic Gardens at Kew holding letters of introduction from Maiden to the Director William Thistleton Dyer.⁵⁵

The value of this long term corresponding relationship continued after Gregson left the Gloucester area. While the stated policy of the Sydney Botanic Gardens was not to send plants to individuals free of charge, Maiden sometimes circumvented this principle. In July 1922, he sent a box of forty-eight miscellaneous shrubs to Helen Gregson of Waterfall at Mount Wilson. He justified side-stepping this policy on the grounds that her father, Jesse Gregson, was 'such a benefactor to this institution.'⁵⁶

Government employees also used the advisory service provided by the gardens. W Goodacre, the senior apiary inspector at the Government Apiary in Wauchope, initiated contact with Maiden seeking advice about his the flora around his post. Understanding flowering of the trees surrounding bee hives was crucial to the success of any commercial honey production. Goodacre desired knowledge so that he could speak with authority when visitors came to his centre and requested information. While Maiden willingly gave information about local trees, he also took the opportunity to use this corresponding relationship to the best advantage of the Sydney Botanic Gardens. Maiden gave Goodacre explicit directions on how to collect, press and index the flora of the Wauchope area. Maiden recommended a systematic approach that included ledgers for cross-referencing plants, specimens and miscellaneous information. In return, Maiden asked for specimen samples and seasonal flowering patterns of Wauchope eucalyptus. Goodacre was to track the flowering across multiple seasons, thus confirming

⁵⁵ Letter from J H Maiden to Thistleton Dyer 18 April 1904, Royal Botanic Gardens Kew AJCP, M741, 178; Letter from J H Maiden to Thistleton Dyer 17 August 1905, Royal Botanic Gardens Kew, AJCP M741, 183.

⁵⁶ Letter from J H Maiden to Helen Gregson, 11/7/22, RBGS, Correspondence files (Herbarium) 1907-1948, SR NSW 8/262.02963.

annual or biannual patterns of reproduction. The reciprocating promise was to publish this information 'with Goodacre's authority.'⁵⁷ In 1921, the *Agricultural Gazette* published three articles penned by Goodacre. Here Maiden mirrored the imperial patterns of authority and deference that were required to maintain these precarious relations.⁵⁸

While he encouraged apiarist W Goodacre, his early correspondence with the bee-keeper W Burton in South Australia took on a remonstrative tone. Not all information was necessarily welcomed by Maiden. Burton sent long detailed letters about bee keeping and the flora associated with this work. He wrote

I am in receipt of your memorandum of many pages. I would suggest that you should not write such long letters; write shorter ones and oftener if you would like.⁵⁹

When he could not supply information himself, Maiden was able to direct correspondents to others who could take up a correspondent's query. When Burton requested information about 'a machine for cutting bamboo tubes' he directed him to the Conservator of Forests of South Australia, Walter Gill.⁶⁰ Burton, also located in South Australia, was able to capitalise on the professional relations that Maiden had developed as director.

Given his proclivity for the usefulness of flora, one might expect that Maiden would have taken a keen interest in the information that Burton sent. Instead, Maiden repeatedly points

⁵⁷ Letter exchange J H Maiden and W Goodacre, 1922, RBGS, Correspondence files (Herbarium) 1907-1948, SR NSW 8/262.

⁵⁸ Endersby, *Imperial Nature: Joseph Hooker and the Practices of Victorian Science*.

⁵⁹ Letter exchange J H Maiden and W A Burton, 1920, RBGS, Correspondence files (Herbarium) 1907-1948, SR NSW 8/262.01491.

⁶⁰ Letter exchange J H Maiden and W A Burton, 1920, RBGS, Correspondence files (Herbarium) 1907-1948, SR NSW 8/262.01491.

out that bee keeping was not an area that he wished expertise in. As Parrish has noted in relation to American/Royal Society correspondence, it was the material culture, understood within a relatively narrow parameters of natural history that interested the learned society. This meant that the item itself, 'augmented by multiple and credible reports of its behaviour in America' took precedence over philological discussions.⁶¹ Maiden, nearing the end of his career at the time of receipt of letters from Burton, made similar distinctions, delineating what was of importance to the institution and requesting that the correspondent comply with these conditions rather than his own desires. He did, however, include what he could in the *Forest Flora of New South Wales*, but told Burton, 'I only wish that I could follow this up, but it is a side-line that I have no possible time for.' This didn't stop Burton from sending still more letters, together with specimens, which Maiden gladly accepted and identified for Burton.

Maiden was always happy to accept information from correspondents about plants. When Dr W Tomlins from Alstonville sent him information about *Melodorum Leichhardtii* he thanked him, writing 'such notes, written by men who live amongst the native plants, are very valuable indeed to correct statements which may have been made with less information, and they also confirm statements.' Ernest Betche, Maiden's first botanical assistant, explained that this plant had been 'described by some collectors as a scrambling shrub but not strictly a climber.' Thus Tomlins comments clarified this description.⁶² In this way, Maiden deferred to local expertise about plants, distinguishing him from Hooker, whose distance and desire to maintain hierarchical relations saw him dismiss much local knowledge.⁶³ The warmth of the

⁶¹ Parrish, "Atlantic Correspondence Networks and the Curious Male Colonial," 120.

⁶² Letter exchange between J H Maiden and Dr W H Tomlins, 1916, RBGS, Correspondence files (Herbarium) 1907-1948, SR NSW 8/262.10973.

⁶³ Endersby, *Imperial Nature: Joseph Hooker and the Practices of Victorian Science*.

correspondence encouraged Tomlins to send his private herbarium of local Alstonville plants to the Sydney Botanic Gardens when he moved to Croydon Park in 1916. Tomlins worried that the plants would be duplicates and not up to the technical standards of a professional institution. Maiden allayed his fears, assuring him that the specimens would be of use. Duplicates were useful to the Gardens for their own purposes of exchange and donation elsewhere.⁶⁴

These letters are important to show how personal relations were built through botanical knowledges. These letters, however, represent only a tiny proportion of the institutional correspondence. The information required from the Sydney Botanic Gardens also ran into the mundane and banal and as such was unable to demonstrate such intimate relations. One popular form of correspondence consisted of seeking advice from the Sydney Botanic Gardens. Advice ranged from the scientifically specific to the economically useful to matters of taste in ornamentals. George Harwood, acting as the Director while Maiden was in Europe in 1900, answered a letter from Joseph Brooks about Kurrajong trees. He advised that it should be transplanted immediately, but was dubious about whether that particular tree would survive in the sandy soils of Woollahra.⁶⁵ When Mrs M Bray of Blayney wrote to request trees for private use, Harwood responded by 'inquiring to the price of Oak trees et cetera, I beg to inform you that we do not supply trees to private persons.'⁶⁶ While individuals could access the Sydney Botanic Gardens' store of advice, strict boundaries were placed around the possibilities of procuring actual stock of plants.

⁶⁴ Letter exchange between J H Maiden and Dr W H Tomlins, 1916, RBGS, Correspondence files (Herbarium) 1907-1948, SR NSW 8/262.10973.

⁶⁵ Letter from J H Maiden to Joseph Brooks, 4 August 1900, RBGS, Copies of letters sent re plants and seeds despatched, 1900-1907, SR NSW 19/17189.63.

⁶⁶ Letter from George Harwood to Mrs M Bray, Blayney, 17 August 1900, SR NSW, RBGS, Copies of letters sent re plants and seeds despatched, 1900-1907, 19/17189.253.

Although Maiden was restricted with regard to plant stock, it wasn't beyond his duties to supply information to private gardeners. In 1916, after receiving a list of plants growing in the garden of Dr Tomlins, Betche recommended 'six choice and uncommon shrubs' as additions. These included: Western Chinese jasmine, *Jasminum primulinum* only recently introduced into Australia; a long flowering variety of Cassia, *Cassia braceata*; a rarely seen type of camellia, *Gordonia anomala*; *Magnolia stellata*, which Betche said was 'at first slow in its growth it is well worth waiting for'; *Cytisus stenopetalus*, a plant originally sent from the Canary Islands by physician Dr Perez; and *Eugenia Luemannii*.⁶⁷ Material transited from the Canary Islands through the Sydney Botanic Gardens and on to Alstonville. Betche knew that Tomlins could source these plants from other suppliers, but sharing of knowledge of ornamental plants helped to create 'global gardens' in Australian towns. As a result, a home garden in Alstonville could display both a touch China *and* the Canary Islands in the backyard.⁶⁸

Maiden's correspondence with Ferdinand Von Mueller was one set of relations that exemplified this simpler type of exchange. When considering the volume of surviving correspondence sent and received by Mueller, Rod Home et al. classify Maiden's as amongst the most prolific. In the process of gathering and editing Mueller's correspondence they found fifty-eight extant letters between the two men from 1876 to 1896. In enumerating Mueller's exchanges, Maiden ranked eleventh of twenty two correspondents. However,

⁶⁷ Letter exchange between J H Maiden and Dr W H Tomlins, 1916 , RBGS, Correspondence files (Herbarium) 1907-1948, SR NSW 8/262.10973.

⁶⁸ Preston explores the widespread introduction of exotics into everyday gardening practices in England in Rebecca Preston, "' The Scenery of the Torrid Zone': Imagined Travels and the Culture of Exotics in Nineteenth Century British Gardens," in *Imperial Cities: Landscape, Display and Identity*, ed. Felix Driver and David Gilbert (Manchester: Manchester University Press, 1999).

despite this seeming importance, not one exchange appears in the three edited volumes of Mueller's letters. The editors justified this absence because of the brevity of content: 'Most strikingly of all, none of the 58 letters to or from Joseph Maiden that we have located has been included, being all comparatively short exchanges on routine business matters.'⁶⁹ It is clear that Maiden did not always view these exchanges as a forum for interpersonal relations, perhaps preferring to confine this to his face-to-face meetings during his semi-regular visits to Melbourne. The letters, instead, indicate the routines of botanical exchange. Correspondents, who were aware of what was required of them, limited their exchanges to short notes. Here the interpersonal was superfluous.

This correspondence was lighter, less detailed than the type that involved long pages and exchange across many years. The identification of plants, kept to short script, reflected the practices of the botanists who signed off on the letters. For example, the Chief Inspector of Stock of the Bourke district sent grass samples to the Sydney Botanic Gardens for identification. In reply, Betche wrote:

Solanum esuriale, Lindl. Solanaceae. Not known to be poisonous.⁷⁰

The second botanical assistant, Sarah Hynes, was no more elaborate when she identified plant samples for Richard Cambage of the Department of Mines.

103. *Calythrin tetragona*. Labill. Myrtaceae.⁷¹

Hynes cross-referenced the material she reviewed thus eliminating misunderstandings when Cambage received the material and notes in return. Cambage, by all accounts a proficient

⁶⁹ Home et al., "Introduction," 45.

⁷⁰ Letter from Ernest Betche to Chief Inspector of Stock, Bourke District, 18 September 1900, RBGS, Copies of letters sent re plants and seeds despatched, 1900-1907, SR NSW 19/17189.543.

⁷¹ Letter from Sarah Hynes to Richard Cambage, Department of Mines, 13 September 1900, RBGS, Copies of letters sent re plants and seeds despatched, 1900-1907, SR NSW 19/17189.516.

botanist in his own right, still depended upon the Sydney Botanic Gardens staff for accurate identification of plant material. It was access to the collection that differentiated Hynes' capacity to identify from Cambage's knowledge. The brevity of words did not mean that this correspondence was of any less importance to the institution than what might be more traditionally considered corresponding relations. The constancy of these requests and the information that the Sydney Botanic Gardens and staff were able to supply demonstrate collections in use; collections that were useful to the bureaucrats who acted as the interface between government and the settler-colony.

Earlier, in the eighteenth and nineteenth century, Secord argues that a man's gentlemanly status corresponded to the reliability of their scientific authority. Science professionalised in the late nineteenth century, thereby, shifting this authority to an institutional level. This is not to dispute the importance of the individual signatory of letters – Maiden's name alone carried a certain amount of authority. However, the combination of man and institution doubled that authority. As Ingrid Jeacle and Tom Brown point out, the use of corporate letterheads lend credibility to correspondence. They say 'the credibility of any document or message is generally determined by the inherent credibility in the source of that communication.'⁷² Maiden's use of form letters secured both elements of this stamp of credibility; they carried the insignia of the Sydney Botanic Gardens, and of the Director – Joseph Maiden.

Form letters and circulars were used extensively during Maiden's era. Form letters represent an important part of the network of exchange being discussed here. Although the long letters personally penned by Maiden and his staff demonstrate how material moved in this period,

⁷² Ingrid Jeacle and Tom Brown, "The Construction of the Credible: Epistolary Transformations and the Origins of the Business Letter," *Accounting, Business and Financial History* 16, no. 1 (2006): 27.

they are just as important to understanding the practices of the institution. Furthermore, they form an important part of the transnational material that helped to create the authoritative position from which the Sydney Botanic Gardens operated in relation to assisting settlement.

Convention dictated that originating correspondents be acknowledged. While there was the simple matter of manners, this also indicates the unreliable nature of postal services at this time. Parcels and publications came from many places and maritime mail was still subject to natural forces: ships could be waylaid or sunk during long journeys. The postal systems within Australia were no less secure, sometimes resulting in lost material. The creation of these form letters complied with preconceived notions of etiquette and 'invests the user with its codified phraseology and recommended tone of address.'⁷³ A letter of acknowledgement was a polite notification of successful transfer. They indicate the professionalism of the institution.

Once the networks of exchange were stimulated by Maiden through requests for desiderata, publications, specimens and seeds flowed into the Sydney Botanic Gardens. Maiden was no longer in a position to write personal notes of thanks and acknowledgement to all the generous donors, collectors and retailers. The solution was to create these form letters. This was the letter used;

⁷³ Ibid.: 39.

Botanic Gardens
Sydney,.....

Sir,

I have the honor to acknowledge the receipt of the
noted at foot, and to thank you for your kindness in making this valuable
addition to the collections of this institution.

I have the honor to be ,
Sir,
Your obedient servant.

Director

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It is worth noting that this letter was not for any one particular section of the collection. There was no expectation that material received would only be specimens or printed matter or seeds or living plants. Collecting was considered in its broader sense, that is, accumulating plants, plant material and plant information.

The extent of material that was sent and acknowledged in this way was breathtaking. The Sydney Botanic Gardens thanked the government geologist of South Australia for the maps sent. They were grateful for the Forestry reports from Simla and Rangoon. They acknowledged the Bulletin of the Agricultural Experiment Station of Idaho and 11 packets of seeds from the Director of the Botanic Gardens, Cape Town. This flow of material was not restricted to those located in the Empire; thanks were also sent out for French reports, German bulletins, Russian seeds and American publications. The correspondence therefore demonstrates not only the interpersonal relations that staff of the gardens may have formed, but also the very literal flows of the physical matter that made the collections transnational. The accumulation of plants, plant material and plant information became the transnational resources which the institutions drew from as it worked on matters of national importance.

Operationalising the transnational network

When Mr A Hamilton of Mt Kembla, Illawarra sent specimens for identification to the Sydney Botanic Gardens in 1900, Ernest Betche was left in a quandary. In the absence of Maiden, who was travelling in Europe, the eucalyptus became a problem. He wrote:

With regard to your Eucalypts, I am scarcely competent to determine them, and would like to shift the responsibility to somebody else. I never loved the genus, and since Mr Maiden came here and took up Eucalypts as a specialty, I never touch them.⁷⁴

He asked Hamilton to send the material to the NSW Railway employee William Deane, who worked on the eucalyptus with Maiden. As the corresponding network formed, regular exchanges translated into useful botanical knowledges. It wasn't simply that one person

⁷⁴ Letter from Ernest Betche to A G Hamilton, Mt Kembla, Illawarra, 18 August 1900, RBGS, Copies of letters sent re plants and seeds despatched, 1900-1907, 19/171189.259.

might understand a particular species, rather when plants, plant material or plant information were needed, the Sydney Botanic Gardens was able to draw on the network. In this way Betche knew exactly who to turn to, in order to retrieve Hamilton's information. Rather than being another officially placed botanist, this person was actually a member of the republic of botanical letters: William Deane.

When staff lacked the necessary expertise to ascertain accurate and correct information, their obvious recourse was to the network of correspondents. In 1900, Betche found that when he was 'looking over our *Cyperaerae*' he came across 'several puzzles.' He contacted J B Luckman of the National Herbarium in Melbourne. Conferring with the experts in the area, whether located in Melbourne or Munich, was simply a matter of sending the specimens and questions, waiting for that information to return and then adding it to the local collections and therefore the local knowledge. Because this was a matter of reciprocity, rather than a service that the Sydney Botanic Gardens paid for, staff bartered what they had in abundance. He sent, in the same parcel as the puzzling specimens, twenty species of exotics from the garden and seeds of *Apodytes dimidiata*.⁷⁵

Given Maiden's interest in surveying the botanical wealth of the country, one of the interstate networks that he fostered and encouraged was with Forestry departments of the different states. In this Maiden followed the advice laid out in William Schlich's 1889 *Manual of Forestry*,⁷⁶ an influential text used by foresters in India, Britain and South Africa in the

⁷⁵ Letter from Ernest Betche to J B Luckman, National Herbarium, Melbourne, 21 August 1900, RBGS, Copies of letters sent re plants and seeds despatched, 1900-1907, SR NSW 19/17189.331-332.

⁷⁶ William Schlich, *Schlich's Manual of Forestry* (London: Bradbury Agnew, 1889).

management of forest reserves.⁷⁷ This text was purchased for the collection in 1898.⁷⁸ Although Maiden lobbied extensively for a botanical survey he never garnered a commitment from the New South Wales authorities. Instead he attempted to construct a survey through gathering material through his networks of collectors and interested locals.

Connecting and maintaining relations with others in the Australian forestry lobby was a way of extracting value from corresponding. George Perrin, Conservator of Forests, Victoria also received seeds and promised to reciprocate with a collection of seeds and specimens.⁷⁹ Walter Gill, the Conservator of Forests in South Australia exchanged specimens with Sydney.⁸⁰ He sent sugar gums, *Eucalyptus cladocalyx*, indigenous to South Australia in 1897.⁸¹ These were propagated and grown to seedlings at the State Nursery at Campbelltown. From here a batch of two hundred trees were sent to Carrathol Shire Council. The Conservator of Forests of Western Australia was sent seeds.⁸² The conservator of Forests of Cape Town sent a pamphlet on Cluster Pine and 'requested certain information.'⁸³ While Maiden's desire may have been to see a survey completed, he understood that to gather the material he required demanded close working relations with others in this field.

In 1900, Betche wrote to the Conservator of Forests in Western Australia demonstrating the volumes of material sent. This letter also shows that the Sydney Botanic Gardens had formulas and format for this practice. He wrote:

⁷⁷ Rajan, *Modernizing Nature: Forestry and Imperial Eco-Development 1800-1950*.

⁷⁸ Joseph Maiden, "Report on Botanic Gardens and Domains, &C. For the Year 1896-7," (Sydney: Botanic Gardens, Sydney, 1897), 12.

⁷⁹ RBGS, Register of letters received, October 1897- December 1898, SR NSW 19/17192.1897.3547.

⁸⁰ RBGS, Register of letters received, October 1897- December 1898, SR NSW 19/17192.1897.3368-9.

⁸¹ RBGS, Register of letters received, October 1897- December 1898, SR NSW 19/17192.1897.3580.

⁸² RBGS, Register of letters received, October 1897- December 1898, SR NSW 19/17192.1897.3691.

⁸³ RBGS, Register of letters received, October 1897- December 1898, SR NSW 19/17192.1898.14.

In reply to your letter 02668 I have pleasure of sending you 100 species and var. of E. Australian plants. Please state in your next letter whether the herbarium of your Dept. is confined to forest trees or if you can take all Phanerogamae, in the latter case we could send you several 1000 duplicates. Our duplicates are distributed in sets of 100, and we keep account of specimens sent, so that no species are repeated in subsequent sets, unless supplement species are previously sent in an imperfect state.

Mr Maiden is anxious to obtain more W. Australian plants, which are but poorly represented in this herbarium, and we are very willing and able to liberally reciprocate for any specimens sent by you.⁸⁴

A large and well stocked herbarium was essential in the process of exchange. It meant that specific desiderata could be filled and in turn gave Sydney Botanic Gardens staff the capacity to broaden their own scope of requests. Thus a common professional interest in forestry created an opportunity to seek the herbarium specimens that were so crucial to exchange.

Correspondence between organisations also had the effect of bringing visitors to the Sydney Botanic Gardens. Some correspondents had the opportunity to visit Maiden in Sydney. Gerritt Wilder, from Honolulu, Hawaii, an Associate in Botany at the Bernice P Bishop Museum, visited in 1923.⁸⁵ Maiden was able to track a group of 51 Australian plants that were sent by Charles Moore to the King of the Hawai'ian islands in 1851 by calling on the good will established through this visit.⁸⁶ In this way the ties were strengthened between places. Other correspondence sequences were very short lived, only concerning a single exchange of

⁸⁴ Letter to the Conservator of Forests, Western Australia, 2 August 1900, RBGS, Copies of letters sent re plants and seeds despatched, 1900-1907, SR NSW 19/17189.35.

⁸⁵ Herbert E Gregory, "Report of the Director of 1922," *Bulletin of Bernice P. Bishop Museum* 4 (1923).

⁸⁶ Letter exchange J H Maiden and Gerrit P Wilder, Bernice P Bishop Museum, 1923, Maiden's Centennial Manuscripts, RBGS Library Special Collections.

letters, plants, plant material or plant information. Only when material continued to flow did a link form that could be drawn upon for the use of the Sydney Botanic Gardens.

It wasn't always as straightforward as letters and other material transiting from one destination to Sydney, and then back again. In July 1913, Maiden received a letter from Senor J F de Assis-Brasil, who lived in the Rio Grande du Sul, Brazil. He was the president of the Brazilian Association for the Encouragement of Agriculture whose seat was in Paris. A diplomat who moved between Europe, The United States and Argentina, he retired and was repatriated to Brazil in 1908. In retirement, he took up a project to establish and develop what he called a Museum of Eucalyptus. His justification for this museum was to acclimatise eucalyptus and stimulate its adoption as a useful timber for his home state. He believed this to be possible because Brazil lay 'on the same latitude of its original habitat.'⁸⁷ He was endeavouring to grow as many species as he could so as 'interested people could get an object lesson on the different species and varieties of the genus.'⁸⁸ He approached Maiden by writing to him, breaching the vast distance between Brazil and Sydney. Although Assis-Brasil was on another continent, in a different state, his letters soliciting advice and plant material emerge from the same contexts as local letters – he was seeking advice and seeds. Maiden was known to be an expert on eucalyptus, while Assis-Brasil owned copies of some volumes of *Critical Revision*, thus a connection was formed via the information circulating through transnational networks.

⁸⁷ Letter exchange J H Maiden and Senor J F de Assis-Brasil, 1913-1922, RBGS, Correspondence files (Herbarium) 1907-1948, SR NSW 8/262.

⁸⁸ Letter exchange J H Maiden from Senor J F de Assis-Brasil, 1913, RBGS, Correspondence files (Herbarium) 1907-1948, SR NSW 8/262.6512.

Initially, Maiden was somewhat dismissive of Assis-Brasil's project. When the Brazilian felt that Maiden had misunderstood his intentions he elaborated:

I am trying to create in this place something like a Museum of Eucalyptus, not only to ascertain the possibilities of acclimatisation for every species, but also to give an object lesson about the differences among species, ... on the attributes of each of them in relation to their capacities to grow, to endure frosts, droughts etc and to afford timber, burning wood, for pasture etc; the first condition for the usefulness of such an experience is authenticity.⁸⁹

He had originally secured seeds 'chiefly' from California and Paris, but found that seeds were often sterile, and more often the trees that grew were not the same as those listed on the labels. Appealing to Maiden's ego, he wrote that if help could be extended then he would 'do his best to extend in these remote regions the glory of your name.'⁹⁰ Assis-Brasil had successfully grown 100 species, and requested that Maiden send him seeds. These seeds, totalling twenty-seven, were sent via Paris. A further twelve species were sent in 1914 but after that time correspondents found that the war had disrupted the flow of packages and letters through Europe. Maiden and Assis-Brasil then had to rely on the very unpredictable mail between their own countries.

As well as drawing on the stock held at the Sydney Botanic Gardens, Maiden recommended Assis-Brasil contact Andrew Murphy, a seedsman from Woy Woy, New South Wales, 'a

⁸⁹ Letter exchange J H Maiden and Senor J F de Assis-Brasil, 1914, RBGS, Correspondence files (Herbarium) 1907-1948, SR NSW 8/262.3111.

⁹⁰ Letter exchange J H Maiden and Senor J F de Assis-Brasil, 1913, RBGS, Correspondence files (Herbarium) 1907-1948, SR NSW 8/262.6512.

reliable collector of Eucalypt seeds.⁹¹ In some cases, Maiden would directly involve a contracted collector to fill orders he received. In July 1901 he requested a meeting with Murphy to discuss the large order received from South Africa.⁹² Assis-Brasil had no desire to contact Murphy, preferring to correspond with Maiden. Maiden's authority as an author and botanist of eucalyptus, coupled with his status as director at the Sydney Botanic Gardens, was useful to Assis-Brasil in providing authority for his own collection. As Donal McCracken said of the Kew letters, 'the correspondence crossed the barriers of class and gender'⁹³ but it also crossed national boundaries. Maiden and Assis-Brasil were connected through this eucalyptus exchange.

Often plants transited in convoluted, rather than direct routes, which Sydney Botanic Gardens' staff understood as a quirk of the system. In 1900 the institution exchanged four species of water plants for botanical specimens of Marschall (sic) Island plants with the German Club of Sydney. Herr Dr Schnee was also implored to send 'any vegetable products suitable for the botanical Museum or seeds for sowing in the garden.'⁹⁴ Although Dr Schnee had received plants from the Marshall Islands, it was within the local network that the Sydney Botanic Gardens was able to locate this material. Maiden was always on the look out in local scientific arenas for people who were not only interested in plants but who were able to send plants to Australia from their own networks. In this case, a connection to the German Club, meant, by default, a link to the Marshall Island.

⁹¹ Letter exchange J H Maiden and Senor J F de Assis-Brasil, 1913, RBGS, Correspondence files (Herbarium) 1907-1948, SR NSW 8/262.6512.

⁹² Letter from J H Maiden to Andrew Murphy Seedsman, Woy Woy, 26 July 1901, RBGS, Copies of letters sent re plants and seeds despatched, 1900-07, SR NSW 19/17190.792.

⁹³ McCracken, *Gardens of Empire: Botanical Institutions of the Victorian British Empire*.

⁹⁴ Letter from Joseph Maiden to Herr Dr Schnee, 31 July 1900, RBGS, Copies of letters sent re plants and seeds despatched, 1900-1907, SR NSW 19/17189.2.

A connection with one correspondent opened up other channels for procuring botanical knowledges. Dr George Perez, regarded by Maiden as ‘a valued correspondent of many years,’⁹⁵ used his gardens at his home La Quinta, Santa Ursula, Tenerife, to grow Sydney hybrids of *Echium*. He grew and potted samples of the Canary Island Palm *Phoenix Canariensis* to send to Maiden.⁹⁶ He also sent an article about the ‘precipitation of mountain mists by means of trees’ written by Monsieur Descombes.⁹⁷ Acting as an intermediary, Perez requested acacia seeds on behalf of a French botanist Monsieur E Jahandiez. Maiden duly sent these directly to the Monsieur in Carqueiranne, France. Similarly, Perez was able to request seeds of the Canary Island Pine *Pinus canariensis* from the Chief Forester of his home state on Maiden’s behalf. Maiden had these seeds sent to the State Nursery at Campbelltown.

In November 1919, William Hardie, superintendent of the nursery, wrote to Maiden to report that he had successfully grown a crop of seedlings from the Canary Island seeds, but was at a loss to know what to do with them. He relayed that the Superintendent of Forest Plantings had no need for them. Maiden responded with the following memo:

These are useful pines & should be distributed with a view to acclimatisation without being asked for. This applies to many other plants.⁹⁸

⁹⁵ Joseph Maiden, “On Tagasaste. With a Plea That It Be Given a Fair Trail in Australia,” *Agricultural Gazette of New South Wales* (1915): 883.

⁹⁶ Canary Island Palms *Phoenix Canariensis* were planted along Macquarie Street during redevelopment in 1909 with trees supplied by the Sydney Botanic Gardens. It is possible that these trees were sent by Perez and then grown at Campbelltown. Colleen Morris et al., “The Domain Masterplan Cultural Landscape Study.” (Sydney: RBGS Trust, 2001), 49.

⁹⁷ Letter exchange J H Maiden and Dr George Perez, 1918-1920, RBGS, Correspondence files (Herbarium) 1907-1948, SR NSW 8/262.

⁹⁸ Memo exchange between J H Maiden and William Hardie, 1919, RBGS, Correspondence files (Herbarium) 1907-1948, SR NSW 8/262.4769.

When Maiden thought a plant was worthy of distribution, he went to great lengths to secure plant stock from the botanical network. Cluster pines were used to stabilise sand drift, as ornamental street and parkland trees, and as sawn timber. They were an especially important plantation tree in France and therefore carried with them the potential for usefulness in Australia. The Sydney Botanic Gardens role was to procure plants, establish their biophysical suitability and secure their distribution. Correspondence between Perez and the Sydney Botanic Gardens enabled the exploration of these ideas in and for New South Wales.

Accessing and using the corresponding network also extended beyond professional links. Professor T G Osborn of the University of Adelaide wrote to Maiden in June 1918 to request help with the identification of plants that had been sent to him by a 'study circle' from Broken Hill that had 'formed to familiarise themselves with the local plants.'⁹⁹ He wrote to Maiden as he was the New South Wales authority. Maiden encouraged this exchange, in spite of the fact that he failed to distinguish the two plants of the salt bush family that he had been sent. He wrote;

I shall be delighted if you are able to devote any time and attention to any of the plants of New South Wales, for I find it a big State, and if you can help me and I can help you in regard to my State's flora, it will be well. I remember one of the Government Botanists, now deceased, thought that each officer should confine his attention to the flora of his own State. I have no such narrow-minded ideas, since plants have no political boundaries.¹⁰⁰

⁹⁹ Letter from Professor T G Osborn to J H Maiden, 20 June 1918, RBGS, Correspondence files (Herbarium) 1907-1948, SR NSW 8/262.02810.

¹⁰⁰ Letter from J H Maiden to T G Osborn, 8/7/1918, RBGS, Correspondence files (Herbarium) 1907-1948, SR NSW 8/262.2810.

This was a storehouse that he expected to be useful to all comers in Australian society. Whether they were interested hobbyists, professional foresters, academics or nurserymen, every request was welcomed.



Statistics of correspondence were gathered and provided in the annual report to the New South Wales parliament each year. These statistics became a key indicator of the value of the Sydney Botanic Gardens to New South Wales as a storehouse for plants, plant material and plant information. In addition to the numeric calculation of letters, Maiden's annual reports also detailed the seed exchanges; seeds received and despatched; living plants received and despatched, herbarium specimens; publications acquired by gift and publications acquired by purchase.¹⁰¹ The bulk of mail sent from and received by the Sydney Botanic Gardens was in the form of plants, plant material and plant information. This meant that seeds, plants, plant cuttings, specimens and illustrations all travelled through these networks normally associated with written correspondence. In addition, correspondence was also entangled with the exchange of reports, publications, journals, books and pamphlets. Reporting on these practices concerned the naming of individuals or institutions connected to Sydney Botanic Gardens through correspondence. In this, the statistics demonstrate the geographic reach of the network connected to the gardens. In addition correspondence was also counted as one body of productive work that included these different types of exchange.

¹⁰¹ These headings were variously named over the course of Maiden's Directorship. This list appears in his first report. Maiden, "Report on Botanic Gardens and Domains, &C. For the Year 1897."

These statistics are an indicator of the utility of the Sydney Botanic Gardens for the state of New South Wales. Abby Kinchy and Daniel Kleinman make this case for ecologists developing a sense of 'public credibility' in the 1970s, arguing that this 'depends on their balancing claims of the purity of their work with assertions of its social utility.'¹⁰² In the case of the Sydney Botanic Gardens, this meant striking a balance between the capacity to continue pure research and science with the perceived needs of the public. Counting the correspondence introduced the idea of abundance and deficit. Telling was Maiden's lamentation on the introduction of the telephone. He complained in 1904 that inquiries made by that method were far harder to report upon, denying him an important way to show the activity and work of the staff. He said:

The telephone is used very freely by citizens (too freely, I think) in search of botanical or horticultural information. Of these "telephone interviews" the Department gets no credit.¹⁰³

His concern was not for the work that was generated, but for his capacity to quantify and report on the productivity of his staff and institution. For Maiden, correspondence was not simply the letters penned by himself and members of his staff. Andrea Rusnock argues in relation to the correspondence networks operating through the Royal Society that 'as a scientific method, correspondence was particularly well-suited to natural history.'¹⁰⁴ This was because objects were mailed along with the letters. Correspondence was a broad category of work in the gardens, and like collecting, this was a practice that ensured transnational movement of botanical knowledges.

¹⁰² Abby Kinchy and Daniel Lee Kleinman, "Organizing Credibility: Discursive and Organizational Orthodoxy on the Borders of Ecology and Politics," *Social Studies of Science* 33, no. 6 (2003): 871.

¹⁰³ Joseph Maiden, "Report on Botanic Gardens and Domains for the Year 1905," (Sydney: Legislative Assembly New South Wales, 1906), 5.

¹⁰⁴ Rusnock, "Correspondence Networks and the Royal Society," 156.

Correspondence that moved through the Sydney Botanic Gardens created and sustained a mobile transnational network. When considered as an institutional practice, a fuller range of correspondence must be taken into account. In doing so, it was clear that active correspondence included much more than penned letters. It also included plants, plant material and plant information – the very lifeblood of the collections at the Sydney Botanic Gardens. These items of material culture are imbricated with the personal relations developed through these same networks. The movement of botanical knowledges facilitated the development of professional relations between the Sydney Botanic Gardens and the outside world while professional relations generated the movement of botanical knowledges. People and plants, society and nature together built these lateral networks of reciprocity. The following three case studies will demonstrate how the practices discussed in the previous chapters shaped the Sydney Botanic Gardens' place stories of Australian settlement.

PART TWO

SUPPORTING SETTLEMENT WITH BOTANICAL KNOWLEDGES

Chapter Five

Prickly Pear Land

The story of the prickly pear in Australia is commonly depicted as a tale of scientific triumph over environmental disaster and, with this, as emblematic of the settlement struggle for the land in the face of invasion or insurrection.¹ Each retelling of the story, from the initial assessment in the 1930s,² to the flurry of scientific anecdotes in the 1940s and 1950s,³ to the beginnings of environmental consciousness in the 1960s⁴ and its reinvention as a cautionary tale in the 1990s,⁵ are remarkably similar in their narrative structure. *The prickly pear became a pest in the central parts of Queensland and northern New South Wales in the late-nineteenth century; it went wild and took over large tracts of pastoral and crown land; it was so dense in parts that it threatened settlement; in the mid-nineteen twenties scientists brought*

¹ This chapter is a substantially extended version of the following article Jodi Frawley, "Prickly Pear Land: Transnational Networks in Settler Australia," *Australian Historical Studies* 38, no. 130 (2007).

² W L Payne and F D Power, "Annual Reports of the Prickly Pear Land Commission," (Brisbane: Queensland Department of Lands, 1925-1930), 4, Edward Samuel, "Fighting the Prickly Pear," *Walkabout* (1936), Charles Fenner, "The Prickly Pear - Advance and Retreat," *Walkabout* (1937).

³ Alan Dodd, *The Biological Campaign against Prickly-Pear* (Brisbane: Commonwealth Prickly Pear Board, 1940), "The War against the Prickly Pear," *Hemisphere* 2 (1958).

⁴ Eric C. Rolls, *They All Ran Wild: The Animals and Plants That Plague Australia*, [New] ed. (London; Sydney: Angus & Robertson, 1984), 354-56.

⁵ Ian R. Tyrrell, "Blasting the Cactus," in *True Gardens of the Gods: Californian-Australian Environmental Reform, 1860-1930* (Berkeley, Calif.: University of California Press, 1999), Donald B Freeman, "Prickly Pear Menace in Australia 1880-1940," *The Geographical Review* 82, no. 45 (1992), William J Lines, *Taming the Great South Land: A History of the Conquest of Nature in Australia* (Athens and London: University of Georgia Press, 1991), 166-67.

the Cactoblastis moth from overseas and overnight the plants were all destroyed allowing settlement to go ahead as expected.

This tale was always told as an adjunct to colonial history; a small tale of progress potentially thwarted. At a time when settlers sought to indigenise their occupation of the land, the prickly pear represented a foreigner that threatened to dispossess the dispossessor. Complicating and departing somewhat from this view, this chapter considers the prickly pear as part of a transnational network that reflected the complex nature of prickly pear land: people, places, ideas, rhetoric and objects that travelled all over the world into rural Australia. While the role of the Sydney Botanic Gardens changed over the years, the institution always provided support for settlement by drawing on the resources of the transnational botanical networks.

The rhetoric used to describe, portray, illustrate and depict the prickly pear provided an important feature of this network before the *Cactoblastis* moth was introduced. The way that the plant was articulated demonstrates the changing features of the transnational field. Where Marilyn Lake sees transnational history as providing the space to consider how global dynamics shaped emergent identities, this chapter considers how it helped to shape emergent environments.⁶ This transnationalism was not constrained by national or imperial borders, but was constituted through the movement of prickly pear, prickly pear material and prickly pear information throughout the world. Such networks have no formal shape or size, but take their form from the energy of the collective emerging in a particular event. Plants, machines, laboratories and ecosystems are integral to such networks. As the prickly pear travelled through such transnational networks, its articulation shifted from host to host.

⁶ Lake, "White Man's Country: The Trans-National History of the National Project," 350.

The prickly pear arrived with the First Fleet, as alien as the white Europeans. It had moved from Brazilian to Australian land, hosting an insect and hopes of successful settlement. Docking at Rio de Janeiro in 1787, Captain Arthur Phillip collected 'all such seeds and plants procured as were thought likely to flourish on the coast of New South Wales, particularly coffee, indigo, cotton and the cochineal fig.'⁷ They included the prickly pear because it played host to an economically important insect, *Dactylopius ceylonicus*,⁸ a coveted economic product. The female fly held a dark red fluid in its abdomen that produced the rich carmine pigment for the fabric dye used for soldiers' coats. The prickly pear was therefore considered a valuable export crop for shipment back to the textile industry in England.⁹ Although the plants did survive in the Sydney district they did not thrive. The First Fleet prickly pear *Opuntia monacantha* never became a real problem, except in fairly localised areas in northern New South Wales.¹⁰ What science today can add is that Prickly pear *Opuntias* disliked the humidity of Sydney and coastal Australian climate: they had to move inland to really settle.¹¹

The very fact that the plant had limited success in adapting to the coastal region of Sydney kept locals open to the idea of the usefulness of the plant. Given the extensive movement of plants during the early part of the nineteenth century, a range of varieties and types of prickly pear continued to arrive in Australia. By 1839, nurseries were selling the plant as a garden

⁷ Joseph Maiden, "A Preliminary Study of the Prickly-Pears Naturalised in New South Wales," *Agricultural Gazette of New South Wales* 9, no. 9 (1898): 980.

⁸ John Mann, *Cacti Naturalised in Australia and Their Control* (Brisbane: Department of Lands, Queensland, 1970), 73.

⁹ Greenfield, *A Perfect Red: Empire, Espionage and the Quest for the Colour of Desire*.

¹⁰ Inventories from the First Fleet do not specify the variety of prickly pear. John Mann, *Opuntia* specialist believed that *O. monacantha* was the plant bought to Australia, as it was found growing in Brazil at the time.

¹¹ A A Webb, "Consequences of Agricultural Land Use in the Brigalow Belt," in *The Brigalow Belt of Australia*, ed. A Bailey (Brisbane: The Royal Society of Queensland, 1984), 177.

ornamental. Prickly pear was to be a fodder plant: food for Australian animals, cattle and sheep. Some varieties of prickly pear were to be food for humans, as were the tunas of Mexico.¹² So adaptive was the prickly pear that uses included hedging for homestead gardens. In Spain, Cyprus and South Africa *Opuntias* hedges enclosed homes, whole villages and plantations as fire breaks.¹³ James Busby, an early Australian viticulturalist, recommended that 'if there is any part of the Rural Economy of the Andalusians which the settler of New South Wales could adopt with advantage, it is the hedge of the prickly pear.'¹⁴ Here we have a living and ferocious fence framing a strange Australian landscape: both fire-proof and cattle-proof, it kept small children in¹⁵ and predators and pests out.¹⁶

The Sydney Botanic Gardens were one of the myriad of transitional centres through which these plants could travel. The movement of prickly pear was enabled through commercial, governmental and personal connections. The Sydney Botanic Gardens supported the pastoral industry during the nineteenth century by importing and acclimatising fodder crops, grasses, clover and grains that would improve the carrying capacity of the land. Maiden first published, in 1896, a translation from French about the use of prickly pear in Morocco to feed cattle.¹⁷ The knowledge that the South American plant had adapted environmentally and economically to North Africa had great appeal in Australia, a colony where settlement was accompanied by pastoralism. Once the prickly pear was established in Australia, it was hoped

¹² A tuna is the name given to the fruit of the prickly pear in Mexico.

¹³ P Gennadius, "Prickly Pear *Opuntia* (Cactus, Barbary Fig or Indian Fig)," *Agricultural Gazette of New South Wales* 10 (1900): 16, W Hoffman, "Ethnobotany," in *Agro-Ecology, Cultivation and Uses of Cactus Pear*, ed. Guisepe Babera, Paolo Inglese, and Eulogio Pimenta-Barrios (Rome: Food and Agriculture Organisation of the United Nations, 1995).

¹⁴ James Busby, *Journal of a Tour of through Some of the Vineyards of Spain and France* (Sydney: Stephens and Stokes, 1833), 14.

¹⁵ Pierce, *The Country of Lost Children: An Australian Anxiety*, 3-94.

¹⁶ W B Alexander, "The Prickly Pear in Australia," (Melbourne: Advisory Council of Science and Industry, 1919), 12, Maiden, "A Preliminary Study of the Prickly-Pears Naturalised in New South Wales," 987.

¹⁷ Paul Bourde and Joseph Maiden (translator), "Plan of Inquiry into the Merits of Prickly Pear as a Forage Plant," *Agricultural Gazette of New South Wales* (1896): 651-57.

that it would provide food for hungry cattle and sheep, particularly during drought, as it had done in other places around the world. Prickly pear has a moisture content of 83%, and while it was offered as food, it was particularly prized for its fluid content, and thus its ability to supplement Australia's meagre water resources.¹⁸

While the hedges kept the cattle away from the homestead, it also fed them. Seeds swallowed by the cattle passed through their digestive tract and remained intact once expelled. Cattle dung was a rich seed bed for the plant; in providing evidence to the Royal Commission on Prickly Pear in 1923, one landholder exhibited a pad of dung with up to one hundred young plants. This landholder assured the commission that the same pad had been producing seedlings for over a decade.¹⁹ In 1928, Bertram Steele of Queensland's Prickly Pear Land Commission argued that it was the drought of 1902 that had forced these animals to alter their feeding habits to incorporate the prickly pear.²⁰

The movement of the plant into new areas of Queensland and New South Wales was activated by the consumption by cattle. During drought in this period, herds of cattle were driven along roads, train lines and especially gazetted stock routes where they would find feed in the crown land adjoining these public routes. Early maps showed the infestation of the pear, in particular the map prepared for the Institute of Science and Industry, which indicated that the pear travelled along transport routes, especially the rail network.²¹ The juxtaposition

¹⁸ C de Girola in Alexander, "The Prickly Pear in Australia," 20, F B Guthrie, "Analyses of Prickly Pear," *Agricultural Gazette of New South Wales* 11 (1900): 673.

¹⁹ Bertram Dillon Steele, "The Royal Commission Appointed to Inquire into Certain Matters Relating to the Prickly-Pear Problem," (Brisbane: Queensland Legislative Assembly, 1923), 47.

²⁰ F D Power, "Fourth Annual Report of the Prickly Pear Land Commission," (Brisbane: Queensland Department of Lands, 1928), 25.

²¹ Alexander, "The Prickly Pear in Australia," plate 1.

of Alexander's map with a Queensland Lands' department map shows stock routes and the main road and rail transport corridors. It provides startling evidence that prickly pear travelled these same corridors. So much so that when Maiden wrote of his journey along the western line to Dulacca in 1910, his dismay was apparent: 'All that the railway traveller can see is pear-infested road and it seems to me a shocking advertisement to any man on the look-out for land.'²² The plant moved with the domesticated animals into Queensland and New South Wales. Paradoxically, the prickly pear's usefulness as cattle fodder, as advised by the Sydney Botanic Gardens, was in reality what made the land useless.

For a period during the nineteenth century the plant had complied within a specified field of social relations as a domesticated plant.²³ As the plant became *unruly* it started to come into view. Although settlers imagined a whole range of uses for the prickly pear, the plant did not conform to these plans. Bruno Latour argues:

Natural objects are naturally *recalcitrant*; the last thing that one scientist will say about them is that they are fully masterable. On the contrary, they always resist and make a shambles of our pretensions to control.²⁴

Prickly pear escaped the homestead garden and instead of protecting settlers from the vagaries and dangers of Australian land, it became a threat itself. It jumped the fence and joined the other side – the wildness of nature – thereby seeding a new hybrid landscape in the briginalow belt.

²² Joseph Maiden, Report to the Undersecretary of Lands, Prickly Pear Letterbook, RBGS, Copies of letters relating to prickly pear 1907-1910, SR NSW 5/4804, 160-61.

²³ Freeman, "Prickly Pear Menace in Australia 1880-1940," 414-16.

²⁴ Bruno Latour, "When Things Strike Back," *British Journal of Sociology* 51, no. 1 (2000): 116.

The 'brigalow belt' was the colloquial expression used by scientists and locals to identify land – predominantly made up of open forests of *Acacia harpophylla*²⁵ – that existed in both Queensland and New South Wales. This land had its natural boundaries: the coastal plains to its east, where it was too humid for prickly pear and the drier, more arid lands to its west, where little cover was available to protect smaller plants. It existed as a belt of land between these two varied geographic landforms. Botanist R W Johnston wrote of these places as floral communities with a mixture of grasses, legumes, eucalypts and acacias, making them reasonably typical of the floral mix of eastern Australia.²⁶ Typically, these floral communities had canopy that only shaded between thirty and seventy percent of the ground area.²⁷ Such dappled light and protection offered by the indigenous ecosystem was entirely welcoming to the prickly pear.²⁸

A range of small bush, vines and grasses grew in the understory of the brigalow. These include bonewood *Macropteranthes leichhardtii*, ooline *Cadella pentastylis*, scrub boonaree *Heterodendrum diversifolium*, as well as the vine thickets *Planchonella* and *Dispyros*.²⁹ The photographic evidence suggests that many of these plants were displaced by the prickly pear.³⁰ This evidence simultaneously suggests that prickly pear did not affect the growing

²⁵ A Bailey, ed., *The Brigalow Belt of Australia* (Brisbane: Royal Society of Queensland, 1984), 3-35, R S Dick, "Five Towns of the Brigalow Country of South-Eastern Queensland Goondiwindi - Miles - Tara - Taroom - Wondoan," *Department of Geography Papers University of Queensland* 1, no. 1 (1960).

²⁶ R W Johnston, "Flora and Vegetation of the Brigalow Belt," in *The Brigalow Belt of Australia*, ed. A Bailey (Brisbane: Royal Society of Queensland, 1984), 42.

²⁷ Robin W. Doughty, *The Eucalypts: A Natural and Commercial History* (Baltimore: John Hopkins University Press, 2000), 2.

²⁸ Freeman, "Prickly Pear Menace in Australia 1880-1940," 413-28.

²⁹ Johnston, "Flora and Vegetation of the Brigalow Belt."

³⁰ Steele, "The Royal Commission Appointed to Inquire into Certain Matters Relating to the Prickly-Pear Problem.", Joseph Maiden, "The Prickly Pears of Interest to Australians No.3," *Agricultural Gazette of New South Wales* (1912), Joseph Maiden, "The Prickly Pears of Interest to Australians No.4," *Agricultural Gazette of New South Wales* (1912), Joseph Maiden, "The Prickly Pears of Interest to Australians No.5," *Agricultural Gazette of New South Wales* (1912), Joseph Maiden, "The Prickly Pears of Interest to Australians No.8," *Agricultural Gazette of New South Wales* (1913), Joseph Maiden, "The Prickly Pears of Interest to Australians No.6," *Agricultural Gazette of New South Wales* (1913), Joseph Maiden, "The Prickly Pears of Interest to

conditions of its acacia host. The natural environment adjusted to the new-comer, and while this meant the loss of some plant species the ecosystem as a whole emerged – hybridized – but flourishing.

The prickly pear nested itself under the protection of the existing flora, enjoying the safety offered by the scrub. The irregularity of the rainfall and the high summer temperatures suited the prickly pear; indeed, it found these climatic conditions more favourable than those in its native South America. This response was typical of invasive plants, which were never problematic in their indigenous environs where natural forces controlled their propagation. In geographic regions that lacked natural predators or climatic controls, growth was exponential.

Emus, crows and scrub magpies happily incorporated the fruit and seeds of the prickly pear into their diet. Emus in particular, being both grain and fruit consumers, were able to modify their diets according to availability. The success of this transition was such that, avian populations exploded. The mobility patterns of the birds meant that they could transit between brigalow forests and farmed lands. This made them a menace to farmers needing to protect their crops and cattle/sheep feed from these birds. In response, a Queensland bonus scheme placed a bounty on each bird slaughtered by settlers. The bounties were calculated thus:

Australians No.7," *Agricultural Gazette of New South Wales* (1913), Joseph Maiden, "The Prickly Pears of Interest to Australians No.2," *Agricultural Gazette of New South Wales* (1911), Joseph Maiden, "The Prickly Pears of Interest to Australians No.12," *Agricultural Gazette of New South Wales* (1914), Joseph Maiden, "The Prickly Pears of Interest to Australians No.9," *Agricultural Gazette of New South Wales* (1913), Joseph Maiden, "The Prickly Pears of Interest to Australians No.11," *Agricultural Gazette of New South Wales* (1914), Joseph Maiden, "The Prickly Pears of Interest to Australians No.10," *Agricultural Gazette of New South Wales* (1914), Joseph Maiden, "The Prickly Pears of Interest to Australians No.13," *Agricultural Gazette of New South Wales* (1915), T Harvey Johnston and Henry Tyron, "Report of the Prickly-Pear Travelling Commission," (Brisbane: Queensland Parliament, 1914), Bailey, ed., *The Brigalow Belt of Australia*, Freeman, "Prickly Pear Menace in Australia 1880-1940."

Table 2. Queensland Government Bonus Scheme 1926-1927

BIRDS	BOUNTY
Emus	2s 6d per head
Crows	6d per head
Scrub Magpies	4d per head
Emu Eggs	1s each

This scheme ran for two years. Between 1st February 1926 and 1st December 1927, 226,202 birds were killed and 109,345 emu eggs destroyed. The commission outlaid £12,982.12.6 in a futile attempt to control the spread of the plants.³¹

Prickly pear was also carried by water flows across these landscapes. As Heather Goodall points out, Australia's inland river systems are made up of highly variable channels. In times of floods, the rivers spill out onto the flood plains, but in times of water scarcity, the rivers can dry up into a series of puddles and shallow flows.³² J P Abbott, Member of the Legislative Assembly for Wentworth, relayed the story of the planting of a hedge of *Opuntias* along the Mooni River 'but when the floods came down the Barwon, it scattered the pears all over the plains.'³³ The ferocity of inland river flooding carried the debris within swift current flows and broke the plants into many pieces. Each piece could germinate a new plant. Mr Rush of Boganbilla in Queensland tried to build a barrier upstream from his land to hold back flood waters, thereby preventing the movement of the plant parts onto his property.³⁴

³¹ Power, "Fourth Annual Report of the Prickly Pear Land Commission," 26.

³² Heather Goodall, "Digging Deeper: Ground Tanks and the Elusive Indian Archipelago," in *Beyond the Black Stump: Histories of Outback Australia*, ed. Alan Mayne (Kent Town, SA: Wakefield Press, 2008), 130.

³³ NSW Parliamentary Debates Session 1885-6, Legislative Assembly, 27 May 1886, 2287.

³⁴ Letter from M Rush Boganbilla Dullaca to Gordon Graham Undersecretary of Lands, Lands Department Correspondence, 1912-1921, QSA LAN/194.

The plant's broad range of reproductive techniques had protected it in the harsh climates and geographies of arid America. This was a key element in its exponential growth in Australia. It wasn't that the conditions were the same as America; it was that certain Australian features enhanced the capacity for growth. The plant had found a niche and developed a strong and stable ecosystem in its new land. During its most active phase, it was estimated the reproductive mass of the prickly pear was one million acres a year. This created a new distinctive landscape: not indigenous, not exotic, but a mixture of the two. What is often missed in histories of the prickly pear land is the vigour of this hybrid ecosystem. Farmers and pastoralists were repositioned in this network because of this hybrid environment. They were now living in prickly pear land.

Movement transformed the once benign, immigrant plant domesticated for ornamental or fodder purposes into a weed. Defining what scientists and farmers classified as a weed helps to understand why prickly pear came to be treated differently. William Bienart and Karen Middleton ask, 'what is the borderline between useful plants and those seen as weeds?'³⁵ The partial answer to this intriguing question lies in the strength of the relations between humans and these plants. Botanist J W Audas defines a weed as 'any injurious, noxious or troublesome plant, that is, at the same time useless or regarded as useless.'³⁶ The International Harvester company from Chicago described weeds with the following four categories:

1. A plant whose virtues have not yet been discovered
2. An undesirable plant citizen

³⁵ William Beinart and Karen Middleton, "Plant Transfers in Historical Perspective: A Review Article," *Environment and History* 10 (2004): 5.

³⁶ J W Audas, "Plants Introduced from Abroad," in *Save Australia: A Plea for the Right Use of Our Flora and Fauna*, ed. James Barrett (Melbourne: Macmillan & Co, 1925), 70.

3. An injurious, unsightly or troublesome plant which is useless or nearly so

4. A plant out of place³⁷

Scientist R J Tillyard reiterates this last statement by suggesting that 'a weed has been well defined as a plant out of place.'³⁸ A weed hinders, but does not halt, settlement. The out of place-ness of the prickly pear was a locational and relative position for the plant; it was dictated by transnational, migratory motion in relation to white settlement. Ellinor Archer argues that defining any weed meant taking a whole range of other factors into account. Archer says 'that a plant may be a weed in some places and not in others.'³⁹ However the key factor in the classifications of weeds was not the inherent qualities – botanically, biologically or ecologically – possessed by the plant. The prickly pear, for example, came to be classified as a weed because of its impact upon land settlement, and more specifically mixed-farming, agricultural practices. Weeds resist by being injurious to children and livestock; by being unsightly to farmers; by being troublesome and out of place to agriculturalists. Non-belonging and out-of-placeness were also used to describe indigenous and Asian populations in relation to settlers. Whether human or plant, othering situated settlers as at home or in place.

In earlier publications the prickly pear was described as existing within the boundaries of 'the noxious weed.' However, as the prickly pear became part of a hybrid environment and continued to spread, it outgrew this category. The first legislation to set up activities for the

³⁷ "Weeds Mean Waste," (Chicago: International Harvester Company and Agricultural Extension Department, 1915).

³⁸ R J Tillyard, "The Biological Control of Noxious Weeds," *Papers and Proceedings of the Royal Society of Tasmania* (1929): 53.

³⁹ Ellinor Archer, "The Migration and Dispersal of Weeds," *Science and Industry* 2, no. 11 (1920): 668.

control of weeds was in Victoria under the *Thistle Act 1890*. Victoria never excised prickly pear from the legislation, always treating it as one among many problem plants. In that colony the *Opuntias* were declared under the Act largely as a result of the problems encountered elsewhere along the eastern half of the continent.⁴⁰ This was not the case in New South Wales and Queensland, where the prickly pear was very specifically managed a range of legislative and other official channels, including the various state and Commonwealth Prickly Pear Acts.⁴¹ In these places the prickly pear was more than a weed, it was a pest.

While the prickly pear grew in scattered clumps it posed only a limited problem to landholders. Where it became dense and thickly spread through brigalow scrub, cattle and sheep could no longer be grazed, horses and riders could no longer pass and the ground could not be planted with crops. Prickly pear land became a serious biological barrier to moving inland at a time when closer settlement was a cultural, political and economic desire of the colonies. In a time of increasing urbanisation, the bush itself and the rural yeomanry lifestyle acquired iconic status. The white bushman, depicted as hardy and racially fit for white settlement, was characterised as being capable – unlike the feminised, soft, urban male – of filling the empty spaces of the north. As David Walker points out, the home of the true Australian, able to hold back the tides of the yellow peril, was not in the city, but rather in the bush. This character was carved out of the experience of working and living in the yeoman life.⁴² We might add that the place where this ideal type could be nurtured into existence was, in fact, prickly pear land. Hence when Maiden refers to the prickly pear as a national pest,⁴³ it

⁴⁰ Alfred Ewart and J R Tovey, *The Weeds, Poison Plants and Naturalised Aliens of Victoria* (Melbourne: J Kemp, 1909), 67.

⁴¹ For example: Vic: *Thistle Act 1890*; NSW *Prickly Pear Destruction Act 1886*, .Qld: *Land Act of 1897 Part 3, Prickly Pear Selections Act 1901, Prickly Pear Destruction Act 1912, Prickly Pear Land Act 1923*

⁴² David Walker, *Anxious Nation: Australia and the Rise of Asia 1850-1939* (Brisbane: University of Queensland Press, 1999), 107.

⁴³ Maiden, "The Prickly Pears of Interest to Australians No.4," 713-16.

was not because of the potential to spread, but because of the threat it posed to the emergence of this national character. In a time when white Australians were being encouraged to populate or perish, the voracious reproduction of the prickly pear radically challenged the reality of settlement.

In his seminal work on biological and ecological invasions, Alfred Crosby comments that 'weeds are plants that tempt the botanist to use such anthropomorphic terms as "aggressive" and "opportunistic".'⁴⁴ In the case of the prickly pear, it was not simply anthropomorphised, but conferred agency as a force to be reckoned by those seeking to advance closer settlement. In this way, the prickly pear resisted settlement and therefore provided the impetus for the Sydney Botanic Gardens, along with others, to intervene and solve this problem. The desire to live in these parts of Queensland and New South Wales was provoked by the idea of how Australians should own and use the land. At this time in Australian history, the right to control the land, or as William Lines puts it, to tame the great south land through conquest, was paramount. Lines argues:

Australians since first founding had felt free to appropriate anything on or below the surface of the continent for their own use. They justified their rapacious behaviour with reference to the Enlightenment promise of a future free from decay, a promise which spoke also of confidence in human reason and of what humans might achieve through an understanding of nature and mastery of the world.⁴⁵

Since the cultural mindset of the nineteenth century in relation to land was conquest, the prickly pear became an efficient adversary in this process.

⁴⁴ Alfred W. Crosby, "Ecological Imperialism: The Overseas Migration of Western Europeans as a Biological Phenomenon," in *Germes, Seeds and Animals: Studies in Ecological History* (Armonk, New York: M. E. Sharpe, 1994), 38.

⁴⁵ Lines, *Taming the Great South Land: A History of the Conquest of Nature in Australia*, xviii.

Over a fifty year period, from the enactment of the first legislation in 1870 until the reclamation of the land by the mid 1930s, ways were sought to relocate would-be farmers onto this land. While many historians are quick to highlight the ultimate success of biological control, landholders in these parts of Australia experienced a drawn-out battle with the prickly pear. The quest for an agent of biological control was not as sensational as later scholars would suggest.⁴⁶ Donald Freeman argues that it was only chance that saw the cactoblastis moth introduced, by scientists, into prickly pear land.⁴⁷ In closing, he remarks that what was needed then, and still needed regarding large scale environmental problems, was a 'quick, coordinated, properly funded and executed response by government.'⁴⁸

What Freeman misses was the variety of measures undertaken by a whole range of disparate and unconnected groups. The network, as a chaotic and unruly relational field, does not allow for the neat, delineated responses that Freeman desired. Instead this was a slow process of experimentation. Experimentation not simply in a laboratory, but in the legislature, in the backyard shed, in the print media and in the Sydney Botanic Gardens. It was the failure to overcome the prickly pear that constantly changed and shaped the response of Australians. The narratives and records of prickly pear land emphasise the role of scientists, farmers and legislators and therefore have much to tell us about Australian attitudes to land.

⁴⁶ For example Geoffrey Bolton, *Spoils and Spoilers: A History of Australians Shaping Their Environment* (Sydney: Allen and Unwin, 1992), 86-88, W R Johnston and P Lloyd, "The Fight against Cacti Pests in Queensland," *Queensland Agricultural Journal* 108, no. 4 (1982): 215-21, Judith Wright, "Landscape and Dreaming," in *Australia, the Daedalus Symposium*, ed. Stephen Richards Graubard (North Ryde, N.S.W.: Angus & Robertson, 1985), 29-56.

⁴⁷ Freeman, "Prickly Pear Menace in Australia 1880-1940," 413.

⁴⁸ *Ibid.*: 428.

Prickly pear was certainly not the only plant to interfere with the management of rural land. Delivering his ranking of plants to the Weed Conference of 1895, Maiden lists twenty species actively causing problems in New South Wales. A variety of thistles, briars, burrs and grass weeds were included in this list. A more detailed comparison and analysis of municipalities and shires was conducted in 1915 by Maiden, in collaboration with the officer in charge of local government.⁴⁹ The resulting top ten weeds of New South Wales excluded the prickly pear.⁵⁰ As prickly pear land increased in area, legislators created Acts of Parliament for its destruction, thereby demarcating the plant out of this group.

Scientists such as Maiden declared it a pest pear, rather than discussing it as one in a range of plants to be dealt with by farmers and pastoralists.⁵¹ Pest pear, or prickly pear, conflated the differences between varieties and species of the plant such that they come to be understood as an agglomeration rather than a series of different plants. *O.inermis*, *O. ficus-india*, *O. monocantha* and *O.aurantiaca* became prickly pear. In this way the plant was collectively othered, paralleling the way that the terms Aboriginal and Asiatic⁵² reduced disparate groups to singular ones.⁵³

Various pieces of legislation, amendments and additions to existing Acts were developed in response to the prickly pear problem between the 1880s and 1930s.⁵⁴ The legislatures of Queensland, New South Wales and, after Federation, the Commonwealth were the three

⁴⁹ Maiden provides no name for this officer.

⁵⁰ Maiden, "Weeds of New South Wales."

⁵¹ ———, "Report on Botanic Gardens and Domian, &C. For the Year 1898.", Joseph Maiden, "Note on *Opuntia Aurantiaca* (Prickly Pear)," *Agricultural Gazette of New South Wales* 23 (1912).

⁵² Japanese, Indian, Afghani, and Macassan peoples were collectively referred to as Asiatic.

⁵³ Penny Edwards and Yuanfang Shen, *Lost in the Whitewash: Aboriginal-Asian Encounters in Australia, 1901-2001* (Canberra: Humanities Research Centre, 2003), 4-6.

⁵⁴ Queensland; New South Wales; Commonwealth

jurisdictions that initiated such Acts. The possibility for intervention here lay in the government control over Australian environments through land tenure. Governments were able to set the terms and frameworks for land use through stipulating boundaries, surveying, contractual arrangements and ongoing management through inspections and monitoring of landholders. As Kay Cohen points out, in Queensland there 'was no simple answer to the land question' in general.⁵⁵ In the end, a balance was sought between free selections and leaseholds as varied as the types of agricultural and pastoral pursuits undertaken in Queensland. It was the system of leaseholds that allowed the Lands departments to set conditions as part of the rental contract.⁵⁶

As it became apparent that prickly pear land was a special case within this system, special leases were used for affected land. A comparison of the fine detail of these Acts would demonstrate the different levels and timing of this sort of government intervention. However, for the purpose of understanding this history the minutiae were less important than the general way in which government interacted with the plant. Such legislation invoked a particular approach for those who actually had to attempt to live on the same land as the prickly pear. The primary use of conditions, as dictated by the lease, meant that landholders were obliged to clear the prickly pear from the land, destroy what had been cleared and maintain the land prickly pear free.⁵⁷ Where conditions were not met, inspectors could hand

⁵⁵ Kay Cohen, "Lands Administration 1859-1910," in *People Places and Policies: Aspects of Queensland Government Administration 1859-1920*, ed. Kay Cohen and Kenneth Wiltshire (Brisbane: University of Queensland Press, 1995), 133.

⁵⁶ Thom Blake, Queensland Cultural Heritage Context Study, unpublished report, Brisbane: Cultural Heritage Branch, Department of Environment, 1996, 11-29.

⁵⁷ Department for Public Lands, Papers, Circulars, Correspondence Etc., Relating to the Selectors Relief Bill of 1900, the Pastoral Leases Act of 1900, Amendment Bill of 1901 to Amend the Land Act of 1897 and to Facilitate the Eradication of Prickly Pear, 1899-1901 in QSA PRV9641 LAN/15, Department of Agriculture and Stock, Prickly Pear Destruction Correspondence 1901-1909, QSA AGS/N340, Queensland Department of Lands, Correspondence between the Prickly Pear Land Commission and Freeholders with Pear Infested Land Resulting from Prickly Pear Land Act 1923, 1924-1941 QSA LAN/195, Queensland Department of Agriculture, Destruction of Prickly Pear (Reward of 5,000), in Minutes of the Executive Council referred to the Secretary of

out fines and in many cases leases were revoked on the grounds of failure to comply. The incentive for a lessee to be bound by these conditions was written into the price per acre of rental. This land was cheap, and looked like a dream that could be turned into a life on the land. Over the time frame of the legislative intervention, the rental rates became more generous and fines more crippling, but the conditions remained largely unaltered.

The imperative to settle was a key part of the government policy. As prickly pear land grew, low rental prices were built into the leases as an incentive. Following his trip to Queensland in 1910, Maiden went so far as to recommend that the government consider either giving the land away, or paying a bonus to those who chose to occupy it.⁵⁸ In one case, the Queensland Government did take up Maiden's call for giving away land.⁵⁹ In 1912, they granted Mr Oliver C Roberts 200,000 acres of land in and around Dulacca in exchange for a peppercorn rent. The Queensland Government agreed to gift Roberts' company, Cactus Estates, upon proof that the land was permanently cleared of pear. Roberts' interest lay in researching, experimenting and developing a poison that could be widely used in Queensland.⁶⁰ For his Melbourne backers in Cactus Estates, it was the potential capital gain in the sale proceeds of cleared land. They used the forecasted revenue to raise the money necessary to fund Roberts'

Agriculture 1900-1903 QSA AGS/N 2, Queensland Department of Agriculture and Stock, Prickly Pear Destruction Correspondence Re Same, 1901-1909, QSA AGS/N 339, Queensland Department of Lands, Correspondence between the Prickly Pear Land Commission and Freeholders with Pear Infested Land Resulting from Prickly Pear Land Act 1923, 1925-1941, QSA LAN/197, Queensland Department of Lands, Correspondence between the Prickly Pear Land Commission and Freeholders with Pear Infested Land Resulting from Prickly Pear Land Act 1923, 1925-1942, Queensland State Archives LAN/196, Queensland Department of Lands, Correspondence between the Prickly Pear Land Commission and Freeholders with Pear Infested Land Resulting from Prickly Pear Land Act 1923, 1924-1942, QSA LAN/198, Queensland Department of Lands, Correspondence with Local Authorities Re Eradication of Prickly Pear under Section 159b of the Local Authorities Act 1902-10 and Maps Showing Infested Areas in Various Parts of the State, 1911-1912, QSA LAN/207.

⁵⁸ Maiden, Report to the Undersecretary of Lands, Prickly Pear Letterbook, RBGS, Copies of letters relating to prickly pear 1907-1910, SR NSW 5/4804,160-61.

⁵⁹ W V Brown, 'Prickly Pear Destruction Bill 1912' in Queensland Parliamentary Debates, Legislative Council, 1912, 2163.

⁶⁰ After the Cactus Estates venture failed, Roberts went on to establish and market his poison called the Roberts Improved Pear Poison. This company supplied poison to the government such that it could be provided at a subsidized rate to landholders.

experiments.⁶¹ This venture failed, with the lease surrendered in 1921 and the company placed under liquidation orders.⁶² In general, however, land holders were not gifted land, but expected to meet the financial burden of rent.

No matter how generous the terms of the lease or how often the inspectors meted out fines, legislation failed to create a position of authority for humans in this environment. While legislating against a plant made it an unruly citizen, the attempt to control its behaviour fell to those who interacted directly with the plant. Rather than offering support scaffolding for those on pastoral leases and holdings, the legislation was punitive in nature. Hence while the government recognised the problem associated with settling land, the responsibility for shifting the stability of the hybrid environment fell to those least able to underwrite removal of the prickly pear. It was the landholders who were left to deal with the removal of stands of the plant. They had two main options; the physical removal of the plant, or the introduction of a poison to assist in the process of removal. While the government did subsidise poisons, neither of these options came cheaply to the landholder.⁶³ Where physical removal was used, it was not uncommon for landholders to complain that it was possible to work full time on the prickly pear all year round without reaching the targets set by the government.⁶⁴

The absorption of labour and capital by prickly pear removal meant the neglect of income producing work. This put landholders in a bind. When landholders complied with the

⁶¹ C F Juritz, "The Prickly Pear Problem in Australia," *Weekly Cape Times and Farmers' Record* (1915): 6, Oliver Cromwell Roberts, "Prospectus for Cactus Estates Limited," in John Oxley Library (Brisbane: 1915).

⁶² Queensland Department of Lands, Cactus Estates Pty Ltd Dulacca, Lands Department, 1912-1921, QSA LAN/194.

⁶³ W L Payne, "Second Annual Report of the Prickly Pear Land Commission," (Brisbane: Queensland Department of Lands, 1926), 7-8.

⁶⁴ Prickly Pear Destruction Correspondence Re Same, 1901-1909, QSA AGS/N339. Correspondence between the Prickly Pear Land Commission and Freeholders with Pear Infested Land Resulting from Prickly Pear Land Act 1923 QSA LAN 197.

regulations and spent money and labour on fulfilling the conditions, they then found themselves unable to concentrate on the generation of income. If they were not in a position to generate income, then they would not have the money necessary to invest in improving the land. The use of leases in this manner was not restricted to prickly pear. As Murray Johnson shows, leases extended to the Soldier Settlement scheme in Beerburrum Queensland in the same time period also had a crippling effect on these landholders.⁶⁵ These lease arrangements all failed to acknowledge the difficulties associated with viable, productive settlement of the land. The cost of settling the land outweighed any financial gain, potential or real.

In many cases land was taken up in hope that eradicating the prickly pear would bring the owners financial stability. One piece of land in Wallumbilla, Queensland changed hands three times over a ten year period. Each of the lessees, Mr Hopewell, Mr Anton Shapovaloff and Mr Grace, all arrived hopeful that they would replace the prickly pear with pastures and livestock. By 1925 the Agricultural Bank had foreclosed Mr Hopewell and on-sold the land to Mr Shapovaloff. By 1928, labouring under the conditions of the lease, Shapovaloff begged the Lands Department to understand his plight:

Being of limited resources I am unable to do as much as I would like to, but as time goes on and I become stronger financially I hope to be able to knock the bulk of the pear out. Trusting you will not be too hard in the meantime.⁶⁶

Despite the impending arrival of the cactoblastis moth to the Wallumbilla area, Mr Shapovaloff also forfeited his lease in favour of Mr Grace. Hope regularly turned into despair for those who attempted to capitalise on the cheap leases. The magnitude of the task –

⁶⁵ Murray Johnson, "'Promises and Pineapples': Post-First World War Soldier Settlement at Beerburum, Queensland," *Australian Journal of Politics and History* 51, no. 4 (2005): 498-500.

⁶⁶ Queensland Department of Lands, Correspondence between the Prickly Pear Land Commission and Freeholders with Pear Infested Land Resulting from Prickly Pear Land Act 1923, QSA LAN 197. 37833.

battling against a plant species that was incredibly difficult to kill – was regularly misunderstood.

The Sydney Botanic Gardens responded to prickly pear land by mobilising transnational botanical networks. Botanists had access to the cultural and intellectual traffic across states, nations, settler colonies and empires.⁶⁷ The Sydney Botanic Gardens were perfectly placed to undertake a leading role in this environmental problem. The staff of the gardens gathered knowledge regarding the *Opuntia* species from the various specialists located all over the world. Sometimes these botanical knowledges were integrated, but other times knowledge paths could be more accurately drawn as a series of unrelated tangents. When taken as a whole, they form what Tony Ballantyne sees as a colonial web, some tangents connected and strengthened through their density, others fragile and singular. He argues: 'by emphasising the mobility of colonial knowledge and the interweaving of the archives of the empire, we can place greater emphasis on the transnational cultural and intellectual traffic that was the very lifeblood of empire.'⁶⁸ For Ballantyne, this means acknowledging the spatial practices of colonialism that drew together both centripetal and centrifugal paths.

For Maiden, this meant drawing on the resources of the institution to understand prickly pear land such that a solution within this logic could be found. In this case the botanical knowledges that were built around prickly pear shifted and filtered by accessing plants, plant material and plant information from all over the world. During the early years of scientific quantification of the prickly pear, Maiden had a great deal of trouble accurately drawing

⁶⁷ Tony Ballantyne, "Rereading the Archive and Opening up the Nation-State: Colonial Knowledge in South Asia (and Beyond)," in *After the Imperial Turn: Thinking with and through the Nation*, ed. Antoinette Burton (Durham and London: Duke University Press, 2003).

⁶⁸ *Ibid.*, 113.

together global botanical knowledges about *Opuntias* and clarifying which exact species was the pest pear. The New South Wales *Prickly Pear Act 1886* initially legislated against four varieties of *Opuntia*. These were: *O.vulgaris*; *O.brasiliensis*; *O.monacantha* and *O.tuna*. Maiden dismissed these plants as unproblematic. Rather, he originally listed the problematic prickly pear as *Opuntia aurantiaca*. He deferred to cacti experts Mr Alwin Berger of La Mortola, Ventimiglia, Italy and Dr David Griffiths of the Department of Agriculture, Washington, United States of America for verification of this conclusion. He suggested that this plant has also 'masqueraded under the names *Opuntia ferox*, *Opuntia horrida*, *Opuntia dejecta* and perhaps others.'⁶⁹ He also sought direction and advice from Professor Schumann in Germany and the Royal Botanic Gardens, Kew in England.

A decade of painstaking research ensued, which included, to the horror of locals, creating a prickly pear garden in the Sydney Botanic Gardens. Being able to see the growth and development of the varieties helped to understand how and why it become so problematic. In the end, Maiden confirmed his 1901 declaration that the pest pear was *Opuntia inermis* and *Opuntia stricta*. Many other prickly pears were naturalised, as Maiden's work shows, but these two plants were the friend of the brigalow and enemy of the landholder. Not surprisingly, the first stop for T. Harvey Johnston and Henry Tyron of Queensland's Prickly-pear Travelling Commission 1912-1914 was the Sydney Botanic Gardens and in particular Maiden. This commission was mandated to travel to all parts of the globe and report on the scientific work on prickly pear. They hoped that solutions for this problem would be found. Maiden provided access to the tendrils of the global botanical network. When the two

⁶⁹ Maiden, "Note on *Opuntia Aurantiaca* (Prickly Pear)," 327.

commissioners left Australia, they held the letters of introduction from Maiden that allowed them to visit thirty botanic gardens on their world tour.⁷⁰

The substantiating of knowledge, through observation of the species, delineation of names, the creation of photographs and drawings, and the continual relaying across borders made the Sydney Botanic Gardens a mediator between the plant and its settlement. With the sorts of botanical knowledges gathered and sifted by Maiden and his staff, Australians were provided with a scientific and therefore authoritative position in relation to the plant. However, while the institution worked on in this area, the plants proliferated, stabilised their ecosystem, and spread. The institutional work of the Sydney Botanic Gardens allowed botanists to represent the pear as scientific knowledge, but these knowledges could only take effect if they moved. While Maiden successfully named the plant, that wasn't what interested those living in prickly pear land. This formal science had to be shifted out of the laboratory and into the land practices of those interacting with the plant.

When the Sydney Botanic Gardens and other sources of knowledge about the plant distributed information, this had implications for the way that landholders dealt with the removal of the plant. The first intervention dovetailed with the lease conditions set out by the governments. When the selectors took up the leases under the Queensland *Prickly Pear Destruction Act 1901*, they were bound to a set of special conditions that proscribed the manner in which the problem was to be addressed. Selectors agreed to clear the pear in the first five years of the lease at a rate of one-fifth of the block per year, and then to keep it clear thereafter. Advice was supplied on how to remove the plant with hoe and shovel. To this end

⁷⁰ Johnston and Tyron, "Report of the Prickly-Pear Travelling Commission."

the scientists distributed the knowledge about the replication of the plant. The plant could grow from the bulb under the ground, so it needed to be dug out completely. If joints of the plant went astray in the removal, they could readily take root wherever they fell. So the farmer needed to be vigilant regarding the movement of excavated plant bulbs.

A second choice offered to selectors was to dig up the plants, including the roots, stack them into heaps, dry them and then burn in entirety or trench and bury them.⁷¹ Historian of fire, Stephen Pyne detailed the shifting uses of fire in the development of agricultural ecosystems in his book *Fire: A brief history*. The application of the principles of fire-fallow farming had allowed humans to sustain themselves within local landscapes. Such farming relied on fire to clear blocks of land and return nutrients to the soil to enhance the productivity of the land. In the process of colonisation, fire became a useful tool as Pyne puts it ‘fire helped swing the ax’ such that ploughing and herding could follow the clearing of the land.⁷² Burning the prickly pear would not only clear the way for settlement, it also turned the weed into soil additive to enhance its sustainability as pasture or field.⁷³

However, the major problem with firing the pear was its natural water content. With a moisture content of up to 83%, prickly pear did not burn simply by setting it alight. Landholders either had to add a propellant or cut and dry the plant before burning. The first of these solutions added a cost and the second added labour. The secondary problem with burning the pear was that it was only ever a short term solution to the problem. Dr Jean

⁷¹ Department of Lands, Register of Tenders, 1903, SR NSW 10/924.1092, 2152, 9791 & 7671.

⁷² Stephen J Pyne, *Fire: A Brief History* (London: British Museum Press, 2001), 82.

⁷³ It is interesting to note that Pyne confines the progression of landscape change through the practices of colonialism from native wilderness to agricultural settlement. Prickly pear land fits neither category and is somehow a transitional land. Its destruction made way for agriculture and pastoralism. It has to make way for the settler.

White, the officer in charge of the Dulacca Research Station in Queensland reported to South African Dr C F Juritz, that:

Experimental *burning* of the pear, it was gathered, was a failure. When burnt completely down to the ground the plants had sprouted up again, and on being burnt down once more they sprouted up once more.⁷⁴

The plant was superior to this method of destruction; it outgrew the landholders at a rate of one million acres a year.

Alternatively, selectors could trench the ground to a depth of three feet and bury all parts of the plant. Again, this practice, like the use of fire in farming, held within it recognisable elements of European farming and gardening practices. While burying the plant to a particular depth ensured that it could not regrow, it also had the effect of providing green matter for the improvement of the soil.⁷⁵ Trenching or burning were both restricted by the prickly pear peculiar biology and low ratios of labour to land. These interventions required a high level of manual labour. Such was the tenacity of the plant's regeneration that burning and burying did not result in control over the land, but represented a constant and continual feature of land management; dominance they never achieved because of the ecological superiority of the plant. The overwhelming nature of this ongoing struggle was attested to by those living with prickly pear.

The experiences of the Shannon family of *Cardowan* near Rockhampton reveal just one example of the anguish experienced by landholders. In their family history they relay the

⁷⁴ Juritz, "The Prickly Pear Problem in Australia," 2.

⁷⁵ Harry Oakman, *Gardening in Queensland* (Brisbane: Jacaranda Press, 1958), 41-48.

heartache that the pear caused. 'The pear was so thick on the Funnell Junction block that the Shannons were obliged to surrender that lease through inability to keep it clear of the pest.'⁷⁶ At Helidon near Toowoomba, the Bigg family farm diaries show the progressive nature of the infestation over a five year period. In 1912, the family was able to confine the prickly pear to their top paddock by using the pear for cattle and pig fodder, as suggested by the experts. Despite their constant attention, within three years the family was despairing of the spread of the pear throughout their selection. By the end of 1915 the harsh impact of the drought on their livestock, orchards and market gardens meant that they were facing 'Pear, Starvation, Damnation.'⁷⁷ The Shannons and the Biggs were luckier than many. They had other holdings where prickly pear was kept to manageable levels and were, therefore, able to hold their livelihood as pastoralists and farmers. They retreated to a position which they were able to defend. Many families walked off the land.

In responding to this problem, the Sydney Botanic Gardens mobilised knowledge into two main streams. Firstly, the articulation of the plants as a curse enabled scientists to table ideas for the destruction of prickly pear, such that settlers could claim the land. Once the prickly pear was removed from land, the economic possibilities, whether in grazing or farming, could be realised. Wherever the hybrid ecosystem dominated the surveyed areas, land could not be taken up under closer settlement schemes. Secondly, scientists sought to create the means to change the articulation of the plant from useless to useful, thus turning it into a blessing. Given the vast territories of land altered through the spread of prickly pear, enlisting the plants to the service of the economy carried the hope of possessing the land on behalf of those being encouraged to take up land under closer settlement schemes.

⁷⁶ Alan Shannon and Jean Shannon, *Cardowan: From Packhorse to Pasture Pioneer: The History of a Central Queensland Cattle Station* (Montville, Qld.: Alan and Jean Shannon, 1998), 37.

⁷⁷ Bigg Family Diaries, John Oxley Library, Queensland, 1910-1915 OM 78, 57.

As a curse, energy was given to removing the plants. Maiden understood that this was a local problem and in 1907, he placed his hope in finding a poison that was both effective and cheap.⁷⁸ Rather than conduct experiments in the Sydney Botanic Gardens, where the plant never grew vigorously, Maiden set out into prickly pear land in Scone. In other instances – for example in the testing of fodder grasses and crops – experimentation was done in the Sydney Botanic Gardens, in plots set out for such purposes. In the case of the prickly pear, in addition to the plants coming to the Sydney Botanic Gardens, the Sydney Botanic Gardens went to the plant. On the 20th October 1907, Maiden and his assistant A H Campbell arrived in Scone for the purpose of undertaking experiments on the prickly pear infested Scone common.⁷⁹ This sixty-eight acre block of land was located two miles from the town adjacent to the town’s cemetery. Mr Campbell was to live on the site in a tent and Maiden undertook to visit the site fortnightly. Maiden understood that these experiments had to be undertaken in an area where the problem was localised.⁸⁰ He put the point that experiments carried out in the County of Cumberland would not convince those dealing with the problem in Scone, Moree and Bingarra.⁸¹

Maiden’s object was to ‘ascertain if Prickly Pear could be profitably destroyed by spraying and if so under what conditions.’⁸² Over the summer of 1907-8 Campbell remained encamped on the Scone common. Into this sixty-eight acre block Maiden and Campbell carved a series of experimental plots. Maiden invested his faith in arsenic poison likely to be the most toxic to the prickly pear. However, arsenic poison, an alkali, does not mix readily with water, and

⁷⁸ Poisons were also used to ‘clear’ indigenous groups from settler land.

⁷⁹ See Gilbert, *The Little Giant: The Life and Work of Joseph Henry Maiden 1859-1925*, 230-33.

⁸⁰ Joseph Maiden, RBGS, Copies of letters relating to prickly pear 1907-1910, SR NSW, 5/4804, 136.

⁸¹ *Ibid.*

⁸² *Ibid.*, 87.

needs a secondary chemical to facilitate the uptake and therefore suitability to spraying. Caustic soda, baking soda and salt were all used with varying degrees of success. Given the need to conform to a commercial principle of cost-effectiveness, Maiden's key variable was the tapering strength of the poison solution. Water was added in larger and larger quantities and carefully recorded by Campbell for analysis by Maiden. Each plot of up to five acres was sprayed 'with the view to give the Department (of Lands) impartial data.'⁸³

They found that the ratio of 11b white arsenic plus 11b caustic soda to 20 gallons of water achieved the desired result: the death of the prickly pear. Maiden and Campbell concluded this experiment with a costing of £2.10.10 for the treatment of 2-2 ½ acres. By 1919, W B Alexander was suggesting this cost had risen to between £2 and £4 per acre.⁸⁴ They did not, however, include the cost of the spraying machine which had cost the Sydney Botanic Gardens around £15. For those on special leases under the legislative arm of the government, enticed onto the land, by the promise of bounty, such costs were crippling. Added to this was the need to restrict livestock from areas that had been poisoned, for as Campbell admitted, despite it eventually disappearing from the surface of the ground over a period of time, the arsenic mix *was* injurious to sheep, cattle and horses.⁸⁵

Maiden made two recommendations to the Department of Lands based on these experiments. Firstly, he asked for a comparative study of machines and appliances to be undertaken to determine the most economical method of distributing the poison. He felt that it was a government obligation to have this information at hand for those settling these lands. The

⁸³ Ibid.

⁸⁴ Alexander, "The Prickly Pear in Australia," 6.

⁸⁵ Ibid., 94.

Sydney Botanic Gardens' experiments in Scone were well placed to provide information that was free of commercial influence. Secondly, he recommended that what he called 'owners of specifics for the destruction of Prickly Pear' come to Scone and conduct experiments. Maiden was inviting his rivals to his open-air laboratory to further the work on prickly pear poisoning. Men like Mr M Kilroy of Sandy Creek, Musselbrook, who had been conducting their own experiments on localised prickly pear land. Maiden advocated for two separate competitions which would deliver him the data he required, without the cost of conducting further work. The Department of Lands chose to ignore these recommendations.

These experiments accrued more data about the biology of the plant, in particular its absolute hardiness, that is, its ability to reproduce itself in multiple ways. In these experiments, Maiden ascertained that if the above ground material was either slashed or burnt, it could regrow from the underground bulb. If the bulb was destroyed and the plant fell over, it simply re-rooted from the joints that met the ground. Only when they understood that the whole plant had to be poisoned - not just the external joints but also the underground bulb - could they make recommendations about the cost of effectively poisoning prickly pear land. In their report they placed a caveat on their results. Despite the poison's ability to kill off the localised prickly pears, seedlings carried by birds and other wildlife meant that constant intervention and vigilance were required to keep poisoned land free of prickly pear. For example he plants even managed to re-establish themselves in the plots where the experiments had been deemed a success. By June, the Acting District Surveyor visiting the site, noted that 'luxuriant growth of young pears are now re-appearing on the areas operated

on' by Maiden and Campbell.⁸⁶ Although poisons remained a key weapon in the fight in prickly pear land through to the 1930s, other possibilities also arrived through transnational networks.

Another possibility at hand for settlers was a mechanical means of removing the plant. Inventions such as the stump jump plough had started to take on in the first decade of twentieth century. This appliance adapted the furrowing technique used in British farming to the Mallee country in South Australia. It was mechanised to move over obstacles such as tree stumps, allowing crops to be planted around the physical barriers in the landscape. Machinery which were tested and proved in other locations, were sought out by selectors and land owners. Maiden used the influence of his position to champion the inventions of William Sinclair, a Texan who relocated to Toowoomba to build and market machines for the destruction of prickly pear.⁸⁷

In 1901 and again in 1907, the Queensland government issued a reward of £5000 and then £10,000 'for any successful scheme for the complete eradication of the prickly pear.'⁸⁸ A range of machines were lodged to claim the prize. Entries included rollers, traction engines, modified stone jumping ploughs, electrocution, specialised hatchets, machines with a million mirrors, steam boilers, knives attached to an electric car and a fire thrower.⁸⁹ To the suggestion by Mrs J R Groundwell from England that watering cans could be used to apply a

⁸⁶ Maiden was incensed by this allegation. He argued that the purpose of experimentation was not to clear the Scone common of prickly pear, but to test the poisons' efficacy and cost-effectiveness. The perception of the Acting District Surveyor was, however, 'that the work done as regards pear eradication has been a total failure.'

⁸⁷ RBGS, Correspondence files (Herbarium), 1907-1948, SR NSW 8/262.

⁸⁸ Department of Agriculture and Stock, Prickly Pear Destruction Correspondence 1901-1909, QSA AGS/N340,1902.10784.

⁸⁹ Department of Agriculture and Stock, Destruction of Prickly Pear (Reward of 5,000), in Minutes of the Executive Council referred to the Secretary of Agriculture 1900-1903, QSA AGS/N 2.

vitrol mixture, Peter McLean, the agricultural advisor, noted 'Seeing that the Prickly Pear is so thick in many places that a dog could not get into it I fail to see how this lady is going to use her watering pot or garden hose.'⁹⁰ Applications were received from places all over the globe. Behind each of these inventions and their inventors lay a misunderstanding about prickly pear land across transnational distance.

Most of the machines that were designed, failed to account for the ecosystem in which the plant had settled and found a home. Although communications travelled through these networks, there was never a guarantee that someone located on the other side of the world would be able to see the local problem. Often what looked good on paper was a whole different matter in prickly pear land. Either they forgot to account for the brigalow scrub, which impeded clear access for tractors, rollers and other large machinery, or they misunderstood the hilly or ridged terrain of the dense prickly pear land. The ecosystem precluded machinery that could not cope with an inclined gradient or scrub forest conditions; prickly pear land was not cultivated land suitable for machines. Prickly pear had no such problem with uncultivated, unsettled land, nestling into the brigalow and growing on the steepest of outcrops. These attempts all failed to bring the unruly pest under control. The cultural investment in settling Australia was such that hope prevailed. If the pear couldn't be removed, maybe it could be used. What a blessing it would have been to find a way to use the sixty million acres of prickly pear land!

In the first of his series publications about prickly pears, Maiden was quick to point out that there was a capacity to shift from being a pest back to being an innocuous plant species. The

⁹⁰ Department of Agriculture and Stock, Prickly Pear Destruction Correspondence 1901-1909, QSA AGS/N340, 04.6871 & 04.02911.

idea of turning livestock into eating machines was circulated. However, in many varieties of prickly pear, the spines prohibited their effective use as a fodder plant. Responding to this physical barrier, scientists and other advocates suggested boiling, mulching and scorching to make the plant more palatable. Apart from the problem of spines that deterred consumption, the plant was of low nutritional value. Cotton seed hulls, bran, and other fibres were suggested as additives to make the plant not only more palatable, but more nutritious. Without these additives, scouring beset the animals – in other words, the high moisture/low fibre ratios of the plant caused diarrhoea.⁹¹ Most animals never thrived on prickly pear, with the quantity and cream content of milk produced by dairy cattle being particularly affected.⁹² At best the prickly pear was a supplement and could never replace the cattle's normal diet.

This evidence direct from pastoralists didn't stop agricultural journals and newspapers from advocating the fodder value of the plant every couple of years.⁹³ Despite the overwhelming evidence presented to the Royal Commission in 1923 resulting in Steele's recommendation that this practice cease, scientists continued to advocate for the use of the plant as feed.⁹⁴ In 1930, Martyn White, writing for *The B.P. Magazine*, extolled the economic virtues of the plant in his article entitled "Potentialities of the Prickly Pear".⁹⁵ He pointed out that the plant was used as fodder in South America and South Africa and advocated the development of the pear as a forage crop adapted for local conditions! In his article, White privileged the expertise of American scientist Luther Burbank. This reportage ignored Joseph Maiden's

⁹¹ Alexander, "The Prickly Pear in Australia," 5-7.

⁹² T. Harvey Johnston, "The Australian Prickly-Pear Problem," in *Report of the Sixteenth Meeting of the Australasian Association for the Advancement of Science*, ed. W B Oliver (Wellington: Australasian Association for the Advancement of Science, 1923), 383.

⁹³ Maiden lists seven publications about the fodder value of the plant in the NSW Agricultural Gazette alone. Maiden, "A Preliminary Study of the Prickly-Pears Naturalised in New South Wales," 988.

⁹⁴ Steele, "The Royal Commission Appointed to Inquire into Certain Matters Relating to the Prickly-Pear Problem."

⁹⁵ Martyn White, "Potentialities of Prickly Pear," *The BP Magazine* (1930): 21, 89.

experiments in Scone and Dr Jean White-Haney's in Dulacca. White's attempt to simply transpose an American scenario onto an Australian environment reflected his lack of knowledge regarding local conditions.

What writers like White failed to grasp was the impact and extent of prickly pear land and the role of cattle in facilitating the spread of the seed which sprouted in the animal's dung. They also failed to understand that it was not a viable source of nutrition. Prickly pear, although abundant and accessible, did not provide a credible fodder crop as it had in other countries. In 1923, Queensland parliamentarian Mr Grimes spoke of the fodder value of the plant, particularly in times of drought. In doing so, he was circulating the botanists' categorisation of useful rather than listening to the first-hand experience of Mr W H Baynes, member for Burnett whose constituency was made up of parcels of prickly pear land.⁹⁶ Baynes attempts to relay the magnitude of the problem to Parliament were fruitless. Science advocated the need of the plant during times of drought, but herein lay the constant double bind: while the plant may have provided fodder when water was scarce, livestock sustained the very conditions for its continued survival in brigalow landscapes. In every report that was made about the plant, it was hoped that domesticated animals would solve the prickly pear problem by eating their way through it.⁹⁷ Such biological solutions neither helped the cattle, nor addressed the acres of plants and tonnage of plant material that existed on prickly pear land.

Other schemes and hopes were invested in reclaiming the plant for some use. Chemists in Queensland and New South Wales argued that it could compete with molasses in the

⁹⁶ C W Holland, "Measures Taken in Queensland for the Suppression of Prickly Pear," in *The Royal Commission Appointed to Inquire into Certain Matters Relating to the Prickly-Pear Problem*, ed. Betram Steele (Brisbane: Queensland Legislative Council & Assembly, 1923), 37.

⁹⁷ Bourde and (translator), "Plan of Inquiry into the Merits of Prickly Pear as a Forage Plant."

production of industrial alcohol.⁹⁸ The plant was tested for its fibre content in the hope that the thousands of acres could be converted to paper or paper products.⁹⁹ Oliver Roberts, of Cactus Estates, experimented with the production of potash, a by-product of the poisoning and burning process which could be sold as a soil additive.¹⁰⁰ Alas, the water content of the plant blocked any such application and left the scientific and research community grasping at straws in the quest to find an appropriate way for it to become a blessing. Failed experiments travelled side by side with the ever expanding area of prickly pear land.

During the first decade after Federation, prickly pear became more than a pest; it became an enemy. As an enemy it became part of a battle; it was no longer a malignant weed or a pesky pest, but an invader. Writers articulated the prickly pear as engaged in a campaign against settlers, as though it had independent agency. In 1911, Maiden pointed out: 'It is a plant which can protect itself, it is not to be trifled with.'¹⁰¹ He placed the plant as the enemy within, his rhetoric echoing the way that the Aboriginal problem was and Asian populations would come to be managed within a White Australia. Problem plants and problem populations evoked a fear of insurrection, hence it is not surprising that the language of vigilance and protection invoked bears some resemblance to the language deployed in relation to non-white Australians.¹⁰²

⁹⁸ J Brunnich, "Destruction of Prickly Pear," *Agricultural Gazette of New South Wales* 23 (1912).

⁹⁹ Johnston, "The Australian Prickly-Pear Problem," 392-95.

¹⁰⁰ "Prospectus of Cactus Estates Limited," in John Oxley Library (Brisbane: 1913), Roberts, "Prospectus for Cactus Estates Limited."

¹⁰¹ Joseph Maiden, "The Prickly Pears of Interest to Australians No.1-No.15," *Agricultural Gazette of New South Wales* (1911-1915): 696.

¹⁰² Gary Alan Fine and Lazaros Christoforides, "Dirty Birds, Filthy Immigrants and the English Sparrow War: Metaphorical Linkage in Constructing Social Problems," *Symbolic Interaction* 14, no. 4 (1991).

There was also a clear correlation between the language of war (being played out in Europe) and this homeland battle for land. The plants were trifling with and threatening Australians from all walks of life: landholders of vast properties and those with tiny tenure of forty to fifty acres; large scale pastoralists and small farmers. With World War as the backdrop, the prickly pear became the enemy against whom these various group united into an armed force. Within this context, the prickly pear was discussed in a way that inscribes the object with a particular type of agency. The settler was part of a battle replete with strategy, a defensive position and, those who surrendered betrayed the cause. During 1914-16, thirty-two selections totalling 54,640 acres were surrendered along the Miles-Juandah railway in Queensland alone.¹⁰³ The desperation of the fight is reflected in comments such as the following made by Commissioner Power, discussing settlement in prickly pear land in the 1920s:

despite the endeavour of landholders, the line of invasion was continually advancing. The efforts of the landholders only temporarily check the line of invasion here and there; each year it gradually advanced as some selectors gave up hope and abandoned their holdings, thus allowing the pear not only to outflank their stronger hearted neighbours who continued the fight, but in many cases to surround their holdings, leave them isolated and entirely surrounded by pear.¹⁰⁴

Where the environment could not be understood or conceptualised, enlisting discourses circulating in the cultural commons was the perfect way to mobilise support and encourage intervention. In this way, urban peoples could understand the plight of the rural settler. Articulating the problem in this way thereby allowed internationally placed scientists,

¹⁰³ Willam Gillies, "The Royal Commission to Inquire into the Question of Building a Railway from Juandah to Taroom from a Land Settlement Point of View," (Brisbane: Queensland Votes and Proceedings, 1916), 972.

¹⁰⁴ F D Power, "Fifth Annual Report of the Prickly Pear Land Commission," (Brisbane: Queensland Department of Lands, 1929), 1.

botanical institutions and even readers of English newspapers to come to terms with its magnitude. In turn, government science and research institutions were empowered to include prickly pear land on their agendas to seek change.

During this phase of the growth of the prickly pear land, and as the idea of the plant as invader grew, entomological research was to provide yet another opportunity to change the situation for settlers. The suggestion by many commentators that the introduction of the *Cactoblastis cactorum* was an overnight success belies the many years of entomological research undertaken in this field. It too, involved a long process of trial and error, experiment, of access to the global information network and the defence of one area of scientific research over another.

This node of the transnational network did not engender the wholesale support of either the scientific community or the public. Maiden was extremely sceptical that this field of research would yield change. He understood that a coccus insect had been responsible for the control of prickly pear outbreaks in India as early as 1795, but had little faith that this could be replicated in Australia. In 1920, writing to his ally in the Queensland Department of Lands, Arthur Temple Clerk, he argued:

My present view is it that is best to let biologists search for an insect that will kill the pest pear, and more power to them, but we should not lose time in searching for what

may be unattainable, and at the same time neglect such means as are available to us.¹⁰⁵

His preference was to undertake mechanical and poisonous reclamation of the land. This was not to say that he was ignorant of the possibilities, just unwilling to place emphasis on this research at the expense of mechanical or poison regimens.

By 1915 Maiden had ascertained that eighteen prickly pear species were naturalised in Australia, of which the *O. inermis* and *O. stricta* were the most common. The other species were also problematic, but often in localised outbreaks. Biological control hinged on the introduction of host-specific, parasitic insects. Tyron and Johnston, in their travels through North and South America, Europe and Asia, returned not only with a report on the state of play in *Opuntia* research, but with a new agent to pit against what W B Alexander described as the 'steady advance of a dangerous enemy.'¹⁰⁶ Alexander enumerated eleven possible insect candidates for introduction in 1919. Such insects were depicted as the natural enemies of a plant, articulated in the same terms of combat that set settler and prickly pear in opposition. Alexander understood what was at stake here. It wasn't that the moth, or beetle, or fly was being introduced as part of an ecosystem, or balancing the chain of life in nature; rather the insect was being enlisted on behalf of closer settlement. The moth was drawn into the battle through its inscription as an enemy of Australians' enemy. In other words, one transnational object at war with another, filtered through the knowledges and needs of settler Australia.

¹⁰⁵ Letter from Joseph Maiden to Arthur Temple Clerk, Lands Department, Queensland, 20 January 1920, RBGS, Correspondence files (Herbarium), 1907-1922, SR NSW 8/262. 298/20.

¹⁰⁶ Alexander, "The Prickly Pear in Australia," 32. The full quote is: "The spread of the prickly pear is like an invasion of a dangerous enemy, advancing steadily and gradually taking possession of our continent.'

Although this was an Australian problem, the only way to deal with it effectively was to extend the network beyond the nation's boundaries. The network needed to be made longer, to gather in places where the *Opuntia* originated but also other places where it had been introduced. When the Queensland, New South Wales and Commonwealth Governments created the Commonwealth Prickly Pear Board (CPPB) in 1923, this is exactly what they did. In order to create this change, institutional support was given to field stations in Southern America. The CPPB connected Australians with scientists in South Africa, India and North America who were also in combat with the prickly pear.

By the time the *Cactoblastis* moth entered the fray in 1926, the *Chelindea* bug and the *Cochineal* fly had been used to varying effect on a variety of prickly pear species. Although Johnston and Tyron had collected *Cactoblastis* moths in America during their journey, these animals had died in transit. Alan Dodd was an entomologist under CPPB's authority stationed in Ulvade, Texas from the early through to the mid 1920s. He studied *Cactoblastis cactorum*, conducting starvation tests on a range of crops and fruits. Once complete, Dodd successfully argued in 1924 for experimentation to continue in the Sherwood laboratories in Queensland. These moths lay their eggs in long chains known as egg sticks. Each stick contained as many as 150 eggs.¹⁰⁷ From Sherwood to Chinchilla and Emerald to Blackall, the eggs were released in a process that scientists refer to as 'liberation.' In the summer of 1926-27, nine million eggs were released by manual insertion of egg sticks into patches of prickly pear.¹⁰⁸

¹⁰⁷ Dodd, *The Biological Campaign against Prickly-Pear*, Alan Dodd, "The Biological Control of Prickly-Pear in Australia," in *The Control of Weeds*, ed. R O Whyte, *Bulletin No 27* (London: Herbage publications series, 1940), Alan P Dodd, *The Progress of Biological Control of Prickly-Pear in Australia* (Brisbane: Commonwealth Prickly-Pear Board, 1929), Mann, *Cacti Naturalised in Australia and Their Control*.

¹⁰⁸ Dodd, *The Progress of Biological Control of Prickly-Pear in Australia*.

Liberation suggests a simple freeing of the insect into the wild. On the contrary, the release of the moth took on the qualities of strategic military deployment. Rescue was executed by foot soldiers on the move in a convoy of trucks, replete with associated advertising and propaganda campaigns.¹⁰⁹ Research stations with insectaries, scientists and fieldworkers were located strategically in prickly pear land, bringing the combatants within range of one another. Scientists and their biological agent carefully infiltrated and resumed control of the land. The insect was liberated into a hybrid ecosystem, and over the following seven years returned settlers to these parts of Australia.¹¹⁰ In the battle for land, it was the landholder who was liberated by the insect.

Within the story of liberation prickly pears were returned to being hosts. Like the First Fleet cochineal fig, it became benign again, no longer a threat or barrier, but a plant that took its rightful place alongside farmers and selectors. It was no longer out of place, but appropriately situated in the order of things; in other words, it was subservient to human needs. Talk about the plant had shifted again, just as the network behind the talk had undergone a substantial physical change that saw settlement by a white population in these areas increase significantly during the 1930s. In the end the prickly pear was not only a host for the coccus of a moth, but also the host of a story of scientific triumph, the apparent solution to one of Australia's enduring environmental problems.

What was a reprieve for the selectors had a different sort of effect for the brigalow forests and associated fauna. The death of prickly pear spelt doom for these floral communities. In the

¹⁰⁹ Payne and Power, "Annual Reports of the Prickly Pear Land Commission."

¹¹⁰ Dick, "Five Towns of the Brigalow Country of South-Eastern Queensland Goondiwindi - Miles - Tara - Taroom - Wondoan," 5-11.

process of sweeping aside the foreigner, scientists and selectors also removed the indigenous. Ian Tyrell acknowledges this change not as a restoration, but as an ‘even greater environmental transformation than any that had gone before.’¹¹¹ As the ecosystem changed, it no longer supported brigalow, prickly pear, emus and other birds, but instead dairy cows, wheat, sheep, cotton and selectors. As a result, the plant was replaced by marginal farming and debilitating land practices. This wasn’t better for the fauna and flora of northern New South Wales and central and southern Queensland, but was it necessarily better for selectors?

This chapter shows how ‘words for country’, to borrow Tom Griffiths and Tim Bonyhardy’s phrase, open up understandings of plants, environments, machines, knowledges, laboratories and humans in a transnational colonial world.¹¹² Tracing the articulation of the plant demonstrates that language was a key component in this transnational network. Each opportunity to change its articulation increased the public and scientific understanding of the plant. The landscape, the problem, and the language grew simultaneously. This language was drawn from a prevailing cultural milieu that was racialised as well as militarised. The network operated across a range of figures, not always with the selector or the scientist at the centre, with the force of the network being found in the energy of the relations *between* different agents in the collective. Prickly pear land considered as a transnational network was not just a local place, but consisted of botanical knowledges, plants, people and ideas from all over the world, all of whom were partially mobilised through the Sydney Botanic Gardens.

¹¹¹ Tyrell, *True Gardens of the Gods: Californian-Australian Environmental Reform, 1860-1930*, 212.

¹¹² Tim Bonyhady and Tom Griffiths, *Words for Country: Landscape & Language in Australia* (Sydney: University of New South Wales Press, 2002).

Chapter Six

Multiple Sites of Wattle

This chapter is about the movement of wattle into multiple sites of the transnational botanical network. It considers the role of the Sydney Botanic Gardens in the promotion of wattle as a symbol of nationalism. Folded into this narrative was another that depicted the usefulness of wattle as an important crop in the quest for closer settlement at the end of the nineteenth century. This chapter will demonstrate how the wattle's articulation as economic botany also contributed to it being taken up as a national symbol. However, wattle was not to be contained by these national imperatives. Wattle was also set into global circulation by agents like Maiden and the Sydney Botanic Gardens. Although wattle was to be relocated to India, The United States and as far afield as Russia, this chapter will look to South Africa as one place that Maiden's wattles were sent along with information about developing plantation crops for the tanning industry. This chapter is important in demonstrating that assisting settlement through the usefulness of plants was not restricted to the economy, or indeed to the territorial state of New South Wales. The possibilities for the Sydney Botanic Gardens to intervene and support settlement emerged in arenas that on the surface seem completely unrelated. These sites are connected through the capacity of the Sydney Botanic Gardens to harness and mobilise botanical knowledges.

Wattle Nationalism

The Federation of the Australian colonies provided the opportunity not only to set statutory boundaries and legal parameters for the new state, but to cement the Australian nation as a cultural entity attached to the state. Keith Sinclair sees the desire for Federation as a popular campaign, which made possible the idea of a homeland nation closely connected to the British Empire.¹ Like Federation itself, this process did not start in 1901 but was generated in the decades before formal ascension in the British parliament and continued long after this date. The use of a particular natural item to represent Australia was part of the process of enunciating the nation. Libby Robin calls the botanic aspect of this enunciation 'wattle nationalism.'² Australians actively attached ideas of nationalism to the wattle, conflating landscape and identity as peculiarly Australian. This represented a shift in the way of thinking about Australian flora. As Richard White points out, 'It was difficult in the nineteenth century to pin down what was distinctive about Australia, *apart from its unique flora and fauna*' (my emphasis).³ The distinctiveness to which White refers was generated by considering Australia's flora and fauna as a set of othered curios represented in scientific discourse.

Australia's distinctive flora had contributed to many intellectual careers including that of Joseph Banks, President of the Royal Society⁴ 1778 to 1820; Robert Brown, Botanist for the British Museum and Joseph Hooker, Director of the Royal Botanic Gardens 1865 to 1885.

¹ Keith Sinclair, "Nationalism and Nation-Making from Federation to Gallipoli," in *The Rise of Colonial Nationalism : Australia, New Zealand, Canada and South Africa First Assert Their Nationalities, 1880-1914*, ed. D. M. Schreuder, Oliver MacDonagh, and J. J. Eddy (Sydney: Allen & Unwin, 1988).

² Libby Robin, "Wattle Nationalism," *National Library of Australia News* 18, no. 4 (2008).

³ Richard White, *Inventing Australia: Images and Identity 1688-1980* (Sydney: George Allen & Unwin, 1981), 68.

⁴ Banks' career was partially built on the Cook voyage, of which included collecting and mapping Australian flora.

All three of these men had travelled to Australia early in their adult lives and built careers partially from articulating and mapping Australian flora as strange.⁵ While botanical science was also mapping local European flora, these plants, although unknown to science, were familiar rather than strange in the way of Australian botany. Each of these key scientists fostered links to Australia that maintained the flow of exotic plants into the laboratories in England. One of the earliest scientific texts written about Australian plants was James Edward Smith's *Specimen of the Botany of New Holland* 1795. He explained:

Whole tribes of plants, which at first seem familiar to his acquaintance, as occupying links in Nature's chain...prove on nearer inspection, total strangers, with other configurations, other oeconomy (sic), and other qualities; not only the species that present themselves are new, but most of the genera, and even natural orders.⁶

For the botanist this involved active engagement with these strange local plants understood within the taxonomic and classification systems of transnational science. Maiden wrote of this period of knowledge production as being focussed on 'botanical novelties.'⁷ Where Australian flora was concerned, science was prefaced on understanding and studying of these strange plants.⁸

Scientific discourse marked the wattle as either exotic or indigenous. Alix Cooper argues that during the seventeenth century an influx of plants and products from the east, like coffee and

⁵ Peter Hanns Reill and David Philip Miller, *Visions of Empire: Voyages, Botany, and Representations of Nature* (Cambridge: Cambridge University Press, 1996), D. J. Mabberley, *Jupiter Botanicus: Robert Brown of the British Museum* (Braunschweig and London: J. Cramer and British Museum (Natural History), 1985), Ray Desmond and Royal Botanic Gardens Kew., *The European Discovery of the Indian Flora* (Oxford: Royal Botanic Gardens Oxford University Press, 1992).

⁶ James Edward Smith and James Sowerby, *A Specimen of the Botany of New Holland* (Melbourne: Edition Renard, 2005), Webb, *George Caley: Nineteenth Century Naturalist: A Biography*, 19, George Caley, *Reflections on the Colony of New South Wales* (1966), 63.

⁷ Maiden, "Report on Botanic Gardens and Domains for the Year 1905," 4.

⁸ Chambers and Gillespie, "Locality in the History of Science: Colonial Science, Technoscience, and Indigenous Knowledge.", MacLeod, *Nature and Empire: Science and the Colonial Enterprise*.

pepper, flooded the marketplaces and tables of early modern Europe, thus creating the cultural conditions necessary for the idea of indigenous to form in relation to that of exotic. Physicians, who authored many of the early floras, took a leading role in delimiting indigenous European plants in relation to exotic plants from elsewhere.⁹ When Jan van Beverwyck, a Dutch physician, published a book called *Indigenous Medicine* in 1644. The term indigenous was understood as both a local territory and as a cultural product with a local history. The curious feature of this particular couplet of terms, indigenous and exotic, was that a plant was never stable within its limits. That is, in Australia the wattle was indigenous, but in England exotic. Stability was not found in the linguistic demarcation of exotic or native, but in the link to territory. Such a classification does more than provide an adjective that describes the plant; it helps us to see how plants are both located and displaced. An Australian plant stayed attached to its territorial home especially when it was found elsewhere.

Robin argues that the Australian environment was a foreign place for British immigrants and that it was not 'part of British literature or expectations.'¹⁰ However, this was partly dependent on how literature was defined and which sectors of the British community were being discussed. In Britain, scientific literature, learned societies and more specifically botanic gardens and acclimatisation societies were in fact very well versed in exotic plants from the Australian environment. While the literature that Robin refers to operated in a different realm, it would be more accurate to say that the foreignness of Australian nature was well articulated in respect of a particular group of plants and animals reterritorialised into botanic and zoological gardens all over world. Robin herself argues that 'Australia had a

⁹ Alix Cooper, "The Indigenous Versus the Exotic: Debating Natural Origins in Early Modern Europe," *Landscape Research* 28, no. 1 (2003): 51-53.

¹⁰ Libby Robin, "Nature Study and Civics: Environment and the Nation," *Educare News* (2003): 50.

complex love-hate relationship with its old and strange nature: an antipodean contrariness seemed to mark the 'strange' nature described by colonial Europeans in the 18th and 19th centuries.¹¹ These plants were already understood as both strange and linked to the territory of Australia.

The fact they were foreign to the British was as much *because* of the way plants were articulated as exotic and therefore as absent from indigenous English cultural forms. In fact, the prolific book trade in travel narratives meant that such exoticism was an expected trope within some genres of English literature.¹² One example of this cross-over between natural science and popular literature was published in Marianne North's 1893 travel memoirs *Recollections of a Happy Life*.¹³ North had travelled to many continents including Australia, painting plant species often within their habitats, capitalising on the appeal of novelties in strange natural environs. Such was the popularity of her writings and exhibitions of paintings that she offered to build a gallery in the Royal Botanic Gardens, Kew to house the work.

It was to the scientific world that North deferred as she travelled, wrote and painted the world. Sara Ahmed, in discussing strangers in an embodied sense states: 'Strangers are not simply those who are not known in this dwelling, but those who are, in their very proximity,

¹¹ Robin, *How a Continent Created a Nation*.

¹² Maiden acquired the following books, among others, in the first year of his directorship. Breton, *Excursions in New South Wales*, 1834; E.J Eyre, *Journal of the Expeditions and Discoveries into Central Australia*, 1845; G Grey, *Journals of two expeditions of discovery in north-west and Western Australia*, 1841; Barron Field *Geographical Memoirs of New South Wales*, 1825. He continued to acquire travel narratives for the Library throughout his directorship. All can be categorised as travel writing in the sense explored by Mary Louise Pratt in Pratt, *Imperial Eyes: Travel Writing and Transculturation*.

¹³ Marianne North and Janet Catherine North Symonds, *Recollections of a Happy Life: Being the Autobiography of Marianne North*, 2d ed., 2 vols. (London: Macmillan, 1892), Marianne North, and Royal Botanic Gardens Kew., *A Vision of Eden: The Life and Work of Marianne North*, 1st ed. (New York: Holt, Rinehart and Winston, 1980).

already recognized as not belonging, as being out of place (original emphasis).¹⁴ Australian botany was othered, and the continent was partially understood through the otherness of its flora. British immigrants carried these notions of strangeness with them as they travelled to Australia. The incorporation of the wattle as a national floral symbol worked against these notions, rearticulating this strangeness into familiarity, grafting Australia onto indigenous wattle.

Wattles were not the only Australian plants to undergo this shift from botanical curiosity to accepted representation. Julia Horne detailed this process with regards to ferns in her book *The Pursuit of Wonder*. She argues that initial discussion of ferns, which took place at the beginning of the nineteenth century, was confined to the scientific realm, and expressed in dry objective language, primarily Latin. By the end of the century, however, botanists, tourists, and travellers all wrote glowingly, in English, about the beauty of Australian ferns and their distinct characteristics in relation to others ferns around the world, particularly those of England.¹⁵ Horne sees this process as 'science and sentiment coming together and contributing to an Australian imaginative framework.'¹⁶ These gradual seeping of scientific knowledge into other realms of Australian cultural life, facilitated Maiden's capacity to shift easily between pure wattle science and the application of that knowledge to both symbolic and economic spheres.

¹⁴ Sara Ahmed, *Strange Encounters: Embodied Others in Post-Coloniality* (London: Routledge, 2000), 21, Libby Robin, "Nationalising Nature: Wattle Days in Australia," *Journal of Australian Studies* 73 (2002): 7.

¹⁵ Horne, *The Pursuit of Wonder: How Australia's Landscape Was Explored, Nature Discovered and Tourism Unleashed*, 253-79.

¹⁶ *Ibid.*, 279.

The discipline of botany has a particular way of articulating the changing patterns of plants within territories. Diasporic plants, those moved within networks of botanic gardens, acclimatisation societies and the nursery industry can become naturalised, but never indigenous. Naturalised plants are those which have established themselves within local ecosystems over a sustained period of time. Naturalised plants can be in a place, but never truly belong, and will always be framed as exotic. A better symbol of the adaptability of immigrants and other non-indigenous travellers would have been wheat. Wheat was imported, adapted to new environments, was the most productive and successful of the maize crops, provided both physical and economic sustenance to a new community and could have been articulated as a symbolic sign of progress.

Australians, however, did not seek a floral symbol that represented naturalisation, expressing, rather, a desire to become home grown. Through the process of articulating nationhood, many Australians sought to indigenise their own belonging. The expression of nation through such plants reflected the quest for belonging. For settlers to claim belonging to Australia they claimed what *was*, credibly, indigenous as their own – the wattle. Robin argues that ‘in an era when white Australia was anxious about its youth and its identity, these were powerful naturalising agents for settler Australians.’¹⁷ This was a process of grafting the exotic onto the indigenous. In the newly federated states, the Sydney Botanic Gardens were perfectly placed, as an authority on Australian botany, to partake in the debate about the appropriate floral symbol for the new nation.

¹⁷ Robin, "Nationalising Nature: Wattle Days in Australia," 15.

The first recorded symbolic use of the wattle was in 1838 in Hobart.¹⁸ After this time, wattle nationalism sprouted in a range of fields. A magazine style journal, the *Wattletonia* ran in Melbourne for a short period in 1870 and included poetry, puzzles and commentary on the virtues of the wattle.¹⁹ Covering the same material, the short lived *Wattle Blossom: An Australian Magazine* from Melbourne in 1880.²⁰ A concerted effort to establish the wattle as a national symbol emerged hand in hand with the pursuit of Federation. One of the community groups that wove these two themes together was the Australian Natives Association, formed in Adelaide in 1871.²¹ Robin argues that this was the 'pre-eminent Australian 'improvement' association.'²² Narrowing membership to locally born white men, this group created a counter movement to the British-born, who still held the most powerful positions in Australian society.²³

Although Robin points to the campaign for wattle as one of their first concerns, they did not co-opt the help of wives of members to form the 'Wattle Blossom League' until 3rd March 1890. Wives, in contrast to the men, could be local born or married to local born members. The task of feminising nature and nation fell to these women, who agreed to wear wattle 'either artificial or real' whenever the opportunity arose. Wattles made terrible cut flowers, never living more than a few hours off the branch, so badges supplanted the need for the real thing. On 18th March 1890, the first social event for the Wattle Blossom League was held at the Town Hall in Adelaide. Tables were set with sprays of wattle as centrepieces, with a

¹⁸ ———, "Nature Study and Civics: Environment and the Nation," 50.

¹⁹ M R B, ed., *Wattletonia*, 1-3 vols. (Melbourne: C Troedel, 1870).

²⁰ Percy Sinnett, *Wattle Blossom: An Australian magazine* (1881).

²¹ Robin, *How a Continent Created a Nation*, 13, Robin, "Nationalising Nature: Wattle Days in Australia," 9-11.

²² Robin, *How a Continent Created a Nation*, 13.

²³ *Ibid.*

poem about Australia read followed by songs about wattle and Australia, patriotism and flora being drawn together through this juxtaposition.²⁴

Although they were called the Wattle Blossom League, the first meeting attended by sixty-one ladies resulted in the adoption of rules and a constitution that seemingly had little to do with the promotion of wattle, and more to do with mirroring the political aspirations of the Australian Natives Association. The objectives of the group were:

1. To promote a national patriotic sentiment among the women of Australia
2. To interest women in the work of the Australian Natives Association
3. To encourage in the household among the rising generation a spirit of Australian patriotism.²⁵

These objectives reflect the role typically ascribed to women of this era, their duty and sphere of influence being confined to other women and the family home. In this way, responsibility for the nation was taken up by women for other women. The Wattle Blossom League succeeded in hoisting a wattle banner featuring the local South Australian wattle *Acacia pycnantha* during the Foundation Day celebrations on 26th January 1891. Wattle was a symbolic vehicle for the transmission of these other goals.²⁶

The campaign for wattle as the national symbol was similarly taken up by Archibald Campbell, who started a private Wattle Club in Victoria. Campbell's interests in ornithology made him an enthusiastic bushwalker, and this club took members out from Melbourne into

²⁴ William Sowden, "Australia: A Plea for Patriotic Sentiment - Order of the Wattle Blossom," in *An Australian Native's Standpoint* (London: Macmillan and Co, 1912), William Sowden, "Outline History of the Wattle Blossom Celebration in Australia," (Adelaide: Australian Wattle Day League, 1913), 2.

²⁵ Sowden, "Outline History of the Wattle Blossom Celebration in Australia," 2.

²⁶ On the ANA see also White, *Inventing Australia: Images and Identity 1688-1980*, 117-19.

the areas where wattle stands blossomed. Groups visited the Werribee Gorge, the You-Yangs and Eltham in early spring to admire the wattle within its ecological habitat.²⁷ As a journalist and early photography enthusiast, Campbell was able to create interesting lectures accompanied by lantern slides for groups such as the Victorian Naturalists club. In 1921, he published a book filled with glossy wattle illustrations called *Golden Wattle Our National Floral Emblem*.²⁸ Other authors took up this interest in the wattle, producing a range of small books and pamphlets designed to be carried on excursions and to aid both appreciation and identification of the species.²⁹

At the Sydney Botanic Gardens

As this general sentiment filtered out into the community across Australia, various states developed local groups to formalise the promotion of wattle for national sentiment. The New South Wales Wattle Day League was formed at a meeting of 'like minded enthusiasts' on 30th August 1909, in the heart of wattle flowering season. Joseph Maiden, Agnes Clunies-Ross and June Kettlewell gathered in the sitting room of Maiden's home at the Sydney Botanic Gardens. There they formed a committee devoted to 'the idea of embodying Australian National sentiment in a native flower'.³⁰ This league's motto was 'wear wattle and plant wattle.' Botanic nationalism was promoted by Maiden in his writings and lectures, helping to construct an everyday knowledge for Australians about the flora that was unique to the nation. Familiarity with the plant helped the British shift from being strangers in a strange land to settled in a home land. In order to achieve these sorts of goals, a shift had to occur; the

²⁷ Archibald James Campbell, *Golden Wattle Our National Floral Emblem* (Melbourne: Osboldstone & Co, 1921), Ian Campbell, "'Yellow-Haired September': A Reflection on the National Floral Emblem in A J Campbell's *Golden Wattle*," *Australian Humanities Review*, no. 41 (2007).

²⁸ Campbell, *Golden Wattle Our National Floral Emblem*.

²⁹ For example T C Wollaston, *Our Wattles* (Melbourne: Lothian Book Publishing Co, c1917), Joseph Maiden, *The Flowering Plants and Ferns of New South Wales* (Sydney: Government Printer, 1895).

³⁰ Agnes L Storrie, "Wattle Day League," in RBGS Library.

plant had to be transformed into one that could metaphorically connect attributes of the plant to attributes of the Australian character and national identity. Of this, Agnes Storrie of the Wattle Day League said 'to the native-born Australian the Wattle stands for home, country, sunshine and love – every instinct that the heart most deeply enshrines.'³¹ Planting wattles as ornamentals allowed gardeners and garden lovers to blend their sense of place with their sense of being Australians.

Acknowledging that national belonging was cultural work that required a commitment Maiden noted: 'it is a pleasant way of studying a group of plants with which Australians are, as a rule, but superficially acquainted.'³² The planting of the wattle allowed Australians to deepen their relationship with Australian environments, while the repetition of the association of wattle with nationalism, which reinforced its links with the nation Australia.³³ This was to know and own a sense of Australian-ness that could be attained through the garden.³⁴ Nationalists, Wattle Day Leaguers, Australian Natives Association members and the Director of the Sydney Botanic Gardens actively transformed the wattle such that the nation could be experienced at the scale of the everyday. For Sarah Whatmore this means that such 'everyday practices' are 'performative rather than cognitive.'³⁵ In planting the wattle the individual performed nationalism rather than explicated a position as an Australian national.

³¹ Ibid.

³² Joseph Maiden, "Some New South Wales Plants Worth Cultivating for Shade, Ornamental, and Other Purposes," *New South Wales Agricultural Gazette* 8, no. 6 (1896): 350.

³³ Stephen Muecke, "What Makes a Carpet Fly? Cultural Studies in the Indian Ocean," *Transforming Cultures ejournal* 3, no. 2 (2008): 30.

³⁴ One way Maiden contributed to the introduction of wattle into domestic gardens was through advice in propagating the plant. See Joseph Maiden, "How to Grow Wattle?," *Agricultural Gazette of New South Wales* (1919): 770.

³⁵ Whatmore, *Hybrid Geographies: Natures Cultures Spaces*, 6.

The use of a plant as a national symbol held within it the possibility of performing a sense of belonging to place at the everyday level. Wattle Day echoed all the rites and spectacles of Arbor Day, which had been instituted in Australia in the early 1890s. Australian schools set aside one day in August or September to plant trees into school yards and other civic places. Wattle day supporters advocated for the same activity but with the wattle as the plant that would be used in civic spaces. They also advocated planting into backyards and domestic gardens, this way drawing the individual and their homely spaces into the belonging to nation. One did not need to be a great orator, or a bushman legend: Australian-ness could be created in the realms of the personal through the planting of a shrub. In this way such plantings also acted as a reminder of how the process of settling brought the land into European hands. Wattle moved from its natural habitats into new, hybrid, urban spaces via the distribution of seeds and young plants by commercial and public nurseries.

The ideas formed by the Wattle League indicate that the wattle was the vehicle of choice for 'containing' a botanical notion of Australia.³⁶ An association with the wattle highlights the uniqueness of the nation, whilst connecting this nation to other settler societies which were establishing symbolic representations of their nations through flora, such as Canada and the Maple Leaf.³⁷ The wattle was individual plant and universal symbol that was according to Maiden, potentially capable of 'propagating national sentiment.'³⁸ To do this Australia needed to replicate other modern nations who had adopted floral symbols.³⁹ In arguing for

³⁶ Zoe Sofia, "Container Technologies," *Hypatia* 15, no. 2 (2000): 194.

³⁷ For South African examples see F G Brownell, *National and Provincial Symbols and Flora and Fauna Emblems of the Republic of South Africa* (Melville: Chris van Rensburg, 1993). Sauer uses these floral symbols as metaphoric references in the title of her article about Canada and Australia. However, she does not critique these metaphors within the article. Angelika Sauer, "The Wattle and the Maple Leaf in the Garden of Empire," in *Shaping Nations: Constitutionalism and Society in Australia and Canada*, ed. Linda Cardinal and David Headon (Ottawa: University of Ottawa Press, 2002).

³⁸ Maiden, "Acacia Burkittii, F.V.M. Burkitt's Wattle," 259.

³⁹ Joseph Maiden, "Some National Flower Emblems," *The Amateur Gardener* (1908): 29-30.

wattle as a symbol of peace, Maiden implored his audience: 'let the Australian wattle have a place beside the rose of England, the thistle of Scotland, and shamrock of Ireland.'⁴⁰ Tending, watering, weeding and nurturing the floral symbol held the possibility of providing growth and dissemination of national sentiment. Maiden understood that the process of national identity was one that needed to be continually cared for to retain its meaning for the people of the territory. The Sydney Botanic Gardens provided a site that occupied the interface between cultural longing and scientific knowledge. From his position of authority in relation to Australian botany and in particular Australian wattle, Maiden shifted his scientific knowledge into the public realm, re-presenting the newly formed Australia for others to read.

The Wattle Day movement also advocated the wearing of sprigs of wattle on this set day, as well as taking wattle bunches to hospitals. This nationalism was translated onto common household items such as plates, vases, cups and saucers, belt buckles, fabrics, and washing machine branding thereby transforming the national symbol into an everyday artefact.⁴¹ As Nina Crone argues this use of Australian plants, in particular wildflowers, was a characteristic of this period.⁴² Even the national coat of arms was altered to incorporate wattle. In the original 1909 version of the arms, the kangaroo and the emu stood on a small mound of lawn. The later version in 1912 saw a wreath of wattles replace the lawn, thus uniting indigenous flora and the fauna in one national symbol.

Maiden enacted this brand of nationalism by planting of wattle in two key places under his charge: in Centennial Park and in the Outer Domain. Rather than planting singular scientific

⁴⁰ Maiden, "Acacia Burkittii, F.V.M. Burkitt's Wattle," 259.

⁴¹ "Object Statement - Wattle," 2005, in Powerhouse Museum Archive.

⁴² Nina Crone, "Symbols of a New Nation: Australia's Flora in the Decorative Arts 1890-1914," in *Planting the Nation*, ed. Georgina Whitehead (Melbourne: Australian Garden History Society, 2001), 76.

examples, as he might have in the Sydney Botanic Gardens, Maiden used his park group's secondary spaces to present wattle in mass. When he planted groups of twenty-eight wattle shrubs in Centennial Park in 1896-7, for their 'showy winter bloom,' he reiterated the conflation of nature and nation.⁴³ In doing so, he replicated the floral stands that he saw on his collecting trips. What he saw in the wild was the uniformity of the stand and it was this he sought to replicate in his urban parks. In championing the wattle, Maiden combined this physical vision into a vision of an Australian community. Maiden himself stated that 'the wattle stands for sunshine, purity, for beauty, for goodwill throughout Australia, for a united happy people.'⁴⁴ Crafting the plant's meaning in this way displaced it from its floral community thereby making it possible to speak of unity. It also homogenised the concept of people and place. A plant that was best displayed as a group of sameness had the same capacity.

Uniformity suggests a particular vision of the Australian nation; one united community.⁴⁵ It obliterates the difference within the community and its make up and, instead, seeks symbols that overwhelm the landscape. Uniformity of this kind symbolically denies the existence of others within the space. Ross Gibson acknowledges that while Federation, and symbolic representation was 'supposed to construct a singular audience – the proud and confident nation' its actual effect was to 'deny that otherness was in its midst even as they put it to work, dispatched it or imprisoned it.'⁴⁶ In the enunciation of wattle as a part of the national narrative, the plant was co-opted as a thread within a broader milieu of white settler

⁴³ Maiden, "Report on Botanic Gardens and Domains, &C. For the Year 1896-7," 18-19.

⁴⁴ ———, "Acacia Burkittii, F.V.M. Burkitt's Wattle," 259.

⁴⁵ Philosopher Linnell Secomb calls the articulation of a 'unified community ... a delusional fantasy' that was always 'actively rejected and resisted by Aboriginal people, other minority groups, and white humanitarians.' Linnell Secomb, 'Fractured Community', *Hypatia*, 2 (2000), 143, 144.

⁴⁶ Ross Gibson, *Seven Versions of an Australian Badland* (Brisbane: University of Queensland Press, 2002), 110-11.

nationalism. Each time the wattle was pinned to the lapel, the nation attached itself too. Each time a backyard had a wattle transplanted, the nation took root as well. Every time the nation was performed through the wattle, the role of collectivity and belonging were replayed, while that difference was refused.

Maiden was also aware that in addition to representing uniformity, the wattle also had the capacity to demonstrate relations between similar groups. A wattle was also a species type and within the botanical world, such categories brought together families of plants. In the Commonwealth School Paper of 1913, Maiden shows how the wattle is not so much a singular plant as one that can be located throughout Australia because of its adaptability to a range of climatic zones across the continent. Wattle as a vernacular name encapsulated a vast range of species: from the Western Australian ground covering *Acacia redolens* to the scrubby Myall wattles *Acacia sowdenii* and *pendula* to the forest trees *Acacia decurrens*. Each wattle was slightly different, yet recognisable in its relations to others.⁴⁷ In this too, the wattle was made ideal. The community needed to be adaptable to different places, in the same way as the many varieties of wattle. Additionally, white Australians' heritage could be English, Irish, Scottish, German, American, depending upon their naturalisation. Maiden relished the capacity of this plant to represent the adaptability and difference of Australians into one identifiable moniker. Although wattle as genera represented the collective of Australia, Wattle League groups singled out one species of wattle, *Acacia pycnantha*, as the individual that best represented the characteristics of the nation.

⁴⁷ "The Commonwealth School Paper for Class III," 1913, RBGS Library, "The Commonwealth School Paper for Class IV," 1913, RBGS Library.

In New South Wales, the decision to establish wattle as the national symbol was far from a *fait accompli*. Here the wattle tussled with the waratah for such honours. Each plant had its champions. The waratah campaign drew support from R T Baker, Curator of the Technological Museum who had replaced Maiden when he moved to the Sydney Botanic Gardens. Baker saw the waratah as 'nature's triumph in this quarter of the botanical world' and wrote a series of articles in the *Technical Gazette of New South Wales* displaying the many ways that the form of the waratah lent itself to the decorative arts of the industrial age.⁴⁸ Baker showed how the waratah had been translated into architectural forms including wallpaper, light fittings, glazed products, ceramics, and plasterwork that have subsequently been understood as part of the Federation architectural style. Baker constantly parried between the attributes of the waratah and its superiority over the wattle. The variation and extent of the designs left Baker remarking that 'the Waratah [required] no aids to produce effects such as the Wattle demands.'⁴⁹ This attempt to show the geographic reach of the plant in Victoria, New South Wales and Tasmania responded to the wattle advocates claim that it was found all over Australia. The wattle had another attribute that Maiden, an expert in economic botany, drew into this debate.

Wattle and waratah could also be categorised as useful and ornamental botany, respectively. Articulating a plant as useful placed it into a network of commercial exchange, and carried the weight and expectation of the colonial project within the Sydney Botanic Gardens. A useful plant was one whose qualities and attributes made it a viable product of industry. Wattle was valuable to settlement through systems of manufacture, extraction and

⁴⁸ R T Baker, "The Waratah in Applied Art: New South Wales Waratah," *The Technical Gazette New South Wales* 2, no. 1 (1911), R T Baker, "The Waratah in Applied Art: The Victorian Waratah," *The Technical Gazette New South Wales* 2, no. 1 (1912), R T Baker, "The Waratah in Applied Art: Tasmanian Waratah," *The Technical Gazette New South Wales* 2, no. 2 (1912).

⁴⁹ Baker, "The Waratah in Applied Art: The Victorian Waratah," 14.

manipulation of its natural properties through science. The bark of the wattle was an additive in the tanning process. Ornamental plants on the other hand were understood as part of the nature of aesthetics and the aesthetics of nature. An ornamental plant had a function, but was not needed. As a result it was considered less important in the era of settler colonialism.

Maiden's privileged the wattle over its rival, the waratah, because it represented the Australian-ness of the continent and had the potential to stimulate the economy thereby yoking the country's emerging national identity to fortune. E S Emerson, writing in the patriotic magazine *The Lone Hand* in 1910, links the profitability and potential of the wattle as a tanning bark to the Australian character.⁵⁰ The establishment of large, uniform plantations was potentially lucrative and reflected the new nation's desire to own and change the land, to impose uniform, Anglo-Saxon cultural ideal upon the territory. Maiden and other botanists saw the wattle as a resource for new Australians, but also as a symbol of the resourcefulness and economic potential of settlers.

This was somewhat of a curiosity given that the most important botanical flora in the Australian economy at this time were not indigenous plants. Cereals – wheat, oats, and maize – were the most important economic crops at the time of Federation. In 1908, Australia had 5,383,911 acres of wheat under crop.⁵¹ Sugar cane was planted into 144,763 acres of land;⁵² while orchards and other fruit gardens comprised 170,448 acres.⁵³ However the commonwealth statistician did not list the land employed in the cropping of wattle. Wattle

⁵⁰ E S Emerson, "Australia's Acacias: An Appreciation for 'Wattle Day' (September 1st)," *The Lone Hand*, September 1910, 355.

⁵¹ Commonwealth Bureau of Census and Statistics, *Official Year Book of the Commonwealth of Australia Containing Authoritative Statistics 1901 to 1907 and Corrected Statistics for the Period 1788 to 1900*, 380.

⁵² *Ibid.*

⁵³ *Ibid.*, 417.

and the contribution of tannin bark was a marginal economic exercise. In the blending of economic development and potential in Australia the obvious choice was a cereal crop, but an exotic foreigner wasn't considered as a national symbol – even if it more accurately symbolised the occupation of Australian land.

Maiden and others promoting wattle were well aware of the circulating visions of Australia as a nation that was becoming increasingly independent – both economically and politically. With this in mind, the wattle was ideally placed to take on the important role of national symbol. While it may not have registered as statistically viable, it represented the potential for economic success and therefore successful nationhood. It was telling that *Acacia pycnantha* was the preferred wattle out of the many varieties known to science at that time. This was one of the main wattles cropped to supply tannin bark to the tanning and fellmongering industry between 1860s and the First World War. It may not have been able to compete with wheat on an economic level, but it could be associated with future prosperity. This reason, combined with its continental distribution meant that the wattle was superior to the waratah. These ideas were well understood by Maiden, who had written one of the seminal Australian publications about the cultivation of wattle plantations for supply of tannin to the tanning industry. Wattle could be cropped in yeomanry circumstances, which reinforced the ideal of closer settlement. It could also be introduced under scientific forestry principles, representing the advanced state of land management advocated by Maiden in other parts of his work.

Wattle as economic botany

Tanning was a chemical process, the antecedents of which are largely unknown. Small scale manufacturing emerged within the economic and social systems of animal domestication, whereby all animal products came to have a use within community. Animal skins were usually a by-product of the butchering of cattle, sheep and goats for food. Converting skins to leather enhanced durability and pliability, allowing simple clothing to become more elaborate as technologies developed in tandem. Stitching, embroidery and tooling improved the possibilities for manufacturing leather in a range of geographic settings including Britain, Europe, the Americas and parts of Asia. The knowledges of tanning processes moved from place to place, but tanners always experimented with local barks, such as Sumach, Scotino, Willow and Oak bark.⁵⁴ As these industries industrialised, abattoirs and fellmongerers were often found together on the water-courses in the fringes of urban life.⁵⁵ Rivers supplied water for the tanning process but also supplied the means for the removal of wastes. Skins were washed in a series of deep pits of water and lime, the hair and fat were removed from the skins, before being returning to the pits to soak in tannin solutions for anything up to two months. The skins were then dried and damped in a process of smoothing that softened the texture of the leather. Tannin provided the colour for the hide, but it also aided in the chemical alteration that preserved this change. The bark in Australian wattles was readily available, while its crumbly texture combined easily with water to create a tanning solution.⁵⁶

⁵⁴ Dixon et al., "Report of the Wattle Bark Board of Inquiry Together with a Statement Showing the Profit to Be Derived from the Systematic Cultivation of Wattles," 23.

⁵⁵ They stank!

⁵⁶ F A Coombs, E Swinbourne, and G W Gabbs, "Fellmongering and Tanning Sheepskins in New South Wales Part 2," *The Technical Gazette New South Wales* 6, no. 2 (1916), F A Coombs, E Swinbourne, and G W Gabbs, "Fellmongering and Tanning Sheepskins in New South Wales Part 1," *The Technical Gazette New South Wales* 6, no. 1 (1916), F A Coombs, "Wattle Bark and Tanning Industry," *The Technical Gazette New South Wales* (1912), Henry Phillips, *A Survey of Fellmongering, Calf Skin and Hide Production, Leather Manufacture in New Zealand and Australia* (Surrey: British Leather Manufacturers' Research Association, 1957).

Stripped, dried and bundled, the bark and its application in tanning was noted in the Sydney Gazette as an export product as early as 1845.⁵⁷

The wattle, or more precisely, the wattle bark contained the right sort of tannin thus making it a perfect local match for the production of leather. In this period leather was a practical product for everyday life. As George Foord pronounced in 1870:

We have but to remember the wide range of applications for leather; - for boots and gloves, for saddlery, for coach-building, for belts and other adjuncts, machinery, for the binding of books and for countless other purposes which meet the eye in whatsoever direction we look.⁵⁸

In cities reliant on horses; at a time when people moved about on foot, thus depending on sturdy of boots, leather was everywhere. Fellmongering and tanning provided an opportunity for botanists to match local tannins to this ancient trade, and in the process made an Australian tree into a local economic product. What Maiden saw was the potential for the plant to serve a range of economic functions. The wattle could play a role as a plantation crop in the small-scale, mixed farming of closer settlement; it could provide seasonal employment during the stripping process, and supported a local manufacturing industry. In addition to these varied economic potentials, Maiden also promoted wattle bark as an export crop.

Wattle was collected from trees by stripping the bark. What probably began as a chance application of a local bark intended to replace the distant and inaccessible European tannin

⁵⁷J Mitchell, "On the Export and Consumption of Wattle Bark and the Process of Tanning, &C.," *Papers and Proceedings of the Royal Society of Van Dieman's Land* 1 (1851): 219.

⁵⁸George Foord, "Tanning," in *Industrial and Technological Museum, Lectures 1871* (Melbourne: Samuel Mullen, 1871), 182.

barks was quickly incorporated into this manufacturing process. It was the local and abundant availability of wattle, combined with an imported trade practice, that gave rise to this new possibility for the wattle. The Ludowici Fellmongery and Tanning plant at Lane Cove in Sydney housed seventy pits to cope with up to three thousand animal skins.⁵⁹ By 1882, up to fifty tanned hides per week were produced from this plant alone.⁶⁰ With tanning plants located throughout Sydney at this time, wattle bark was in high demand. By 1890 Victoria housed ninety-six tanneries and consumed between 12,000 and 15,000 tons of wattle bark each year for the local industry.⁶¹ The viability of this industry was wholly dependent on a steady supply of good quality, tannin-rich bark from the Australian wattle.

To ensure this supply and thus the vigour of a local industry that supported over one thousand families, the Victorian parliament appointed seven men to the Wattle Bark Board of Inquiry in 1878. In addition to determining its export capacity, the Board was required to present a 'full and careful investigation into the subject of wattle conservation and the concomitant industry of bark-stripping.'⁶² The board was also charged with the duty of turning anecdotal evidence about the ad hoc approach to the bark stripping into a measured and controlled understanding of the process. The Board then made a series of recommendations based on their findings about how to best manage this resource for future use.

⁵⁹ P.R. Cole, "The Leather Industry and J C Ludowici," in *Pioneers of Australian Industry: Australian Industries and Their Founders* (Sydney: George B. Phillip, 1926), 135, Audrey Tate, *Ludowici Limited: Pioneering the Past : Forging the Future 1858-2004* (St Leonards, N.S.W.: Allen & Unwin, 2005).

⁶⁰ Tate, *Ludowici Limited : Pioneering the Past : Forging the Future 1858-2004*, 12.

⁶¹ Dixon et al., "Report of the Wattle Bark Board of Inquiry Together with a Statement Showing the Profit to Be Derived from the Systematic Cultivation of Wattles," 4.

⁶² *Ibid.*, 3.

One of the Board's key findings was that stripping of trees was indiscriminate, with younger and younger trees being denuded due to increased demand, thereby affecting the quality of the tannin. The bark of wattles over five years old yielded the best tannin content in their bark. In the main wattles were not cropped, but strippers worked from stands wherever they happened to be available. This was piecemeal work undertaken by itinerant bush workers who moved between stripping and other types of short term work, depending on availability. The increasing demand for wattle bark as an export product, in addition to the local demand, placed a pressure on these natural resources.

The board developed a series of recommendations that aimed at simultaneously protecting the and maximising the commercial capability of wattle. At this time conservation of forests was wholly linked to an economic function. As such, the Board outlined a scheme that called for the systematic cultivation of wattle. This meant restricting indiscriminate stripping. They proposed the introduction of a license scheme policed by local constabulary; planting and cultivating wattle as a crop in crown, freehold and leasehold lands; and restricting the stripping season to spring to allow re-growth of wattle stands.⁶³ In effect, what the Board recommended was that bark stripping be taken out of the hands of itinerant working poor and placed in the hands of those with a legal claim on land. Cropping wattle was seen as an enterprise that contributed to the economic stability of individual settlers and to the broader economy. The usefulness of cropping wattle promoted by the Sydney Botanic Gardens contributed not to a cultural notion of belonging, but an economic one.

⁶³ In Botany, the noun 'stand' refers to a group of several plants, especially trees, growing together in one place. Wattles are commonly found grouped together and where therefore referred to in the literature as wattle stands. In spring these stands are easy to locate because of the showy blooms of yellow and white florescence.

The report was influential amongst the emerging Forestry departments in Victoria, New South Wales, Tasmania and South Australia over the last two decades of the nineteenth century.⁶⁴ Forestry conservators planted wattle in railway corridors and then recommended against such action because it created a fire hazard when combined with steam engines. Others introduced the licensing, for example, under the Forest Acts of Victoria. In New South Wales, the response of the curator of the Technological Museum to the report was to further investigate the plant. He undertook a series of experiments with wattle in order to ascertain the exact tannin levels. Joseph Maiden first published his *Wattles and Wattlebarks: being hints on the Conservation and Cultivation of Wattles together with Particulars of their Value* in 1890 and only one year later published a second edition with a range of revised material.

Maiden's document added chemical certainty into the mix of how settlers could draw a local indigenous plant into their commercial operations. It also established Maiden as an authority in relation to Australian plants and their potential as economic botany. This authority was partly built from his ability to quantify the tannin content of the wattle. To do this Maiden passed the plant through a series of experiments the main outcome being the tables delineating tannin content that were published in the booklet. Harrie Wood, Director of Agriculture and Forestry reported in 1892 that Maiden was part of the process whereby a remedy for ignorance about productive plants was to 'actively diffuse accurate information in regard to the various articles the colony produces.'⁶⁵ Accuracy was not to be gained from anecdotal stories of those who lived with wattle, for example, but from a displacement of the wattle through vats and test tubes in the laboratory to give the information scientific

⁶⁴ Suzette Searle, "The Rise and Demise of the Black Wattle Bark Industry in Australia," (Yarralumla ACT: CSIRO Division of Forestry, 1991), 10-15.

⁶⁵ Harrie Wood, "Annual Report of the Department of Agriculture and Forestry," (Sydney: Legislative Assembly of New South Wales, 1894-5), 50.

legitimacy. Once accuracy was established, Maiden's recommendations were authorised by his tabulations of wattle.

Using the networks of reciprocity, Maiden sent his wattle publication to three main groups: newspapers; botanical institutions and individuals. This does not appear to be a case of people soliciting information, but of Maiden conducting a concerted campaign to circulate this information throughout the colonies. 116 newspapers throughout New South Wales received the booklet in 1890. He also sent it extensively throughout Australia, to landholders located in remote regions and coastal abodes. Botanic gardens, Departments of Agriculture, universities and specialist societies such as the Royal Society and the Pharmaceutical society were targeted by Maiden. Exported material was predominantly sent to Europe, North America to South Africa. Settler colonies dominated the pathways that Maiden chose for conveying this information.⁶⁶

What the botanical network additionally allowed, and Maiden capitalised upon, was his inclusion of plant material as well as information.⁶⁷ As table three shows packets of seeds, seedlings, and herbarium specimens also travelled with *Wattle and Wattlebarks*. In this way, Maiden did more than just supply the advice about how the tanning industry could be developed and whether wattle tannins were chemically superior to other plants. The inclusion of *A. pycnantha* and *A. decurrens*, those Maiden discerned as the best of the Australian wattles for tannin content, provided the possibility of environmental change both in Australia and other settler locations throughout the world. Interestingly, although not a settler location,

⁶⁶ Record of free publications 1890-1892, Powerhouse Museum Archive, MRS 44-47.

⁶⁷ RBGS, Register of letters received, October 1897- December 1898, SR NSW 19/17192-8.

one bundle of wattle, wattle material and wattle information found its way, through translation, to the Sukham Section of the Institute of Applied Botany in Leningrad, where wattles were planted and cropped in the 1920s.⁶⁸

Table 3. Correspondence regarding wattles 1897-1898

DATE	LETTER AND DETAILS ⁶⁹
11 October 1897	From IW Ellis, Fernholm, Manly Re: <i>Acacia decurrens</i>
9 October 1897	From the Overseer Centennial Park Re Border being planted with Acacias
24 October 1897	From G M Elliot, Fernholm, Manly Tendering thanks for work on wattles and wattle culture.
1 December 1897	From OJ Rush 68 Dowling Street Paddington Asking for a copy of "Wattles and Wattle Barks of New South Wales"
14 December 1897	From The Under Secretary of Lands Respecting the cultivation of wattle
8 March 1898	From H Andzey (H Redattore capo) "La Conceria", Turin Asking for a collection of wattle barks for Turin Exhibition
20 April 1898	From Director, Botanic & Domain Gardens, Melbourne Asking for a few seeds of <i>Acacia Baileyana</i>
5 April 1898	From J H Barber Forestry Exch Station, Santa Monica, California Inquiring where to obtain a copy of Wattles and Wattle barks
1 June 1898	Undersecretary of Forests Sydney Respecting wattle-barks
28 June 1898	From Walter Gill, Conservator of Forests Adelaide Re Exchange from local Wattle Factory

⁶⁸ V Nicolaieff, "Australian Acacias and an Experiment of Their Acclimatization," *Bulletin of Applied Botany, Genetics and Plant Breeding* 22, no. 4 (1929).

⁶⁹ Compiled from Register of Letters Recieved 1897-8, RBGS, SR NSW 19/17192-8.

4 July 1898	From Conservator of Forests, Western Australia Asking for seeds of <i>Acacia Baileyana</i> (sic)
20 July 1898	From R D Hay (for H S Lando) Respecting collections of Wattle Barks for Turin Exhibition
18 August 1898	From J H Barber Forestry Experimental Station Santa Monica, Cal., USA Ack: receipt of Wattles and Wattle-barks, & re offer of data on <i>Acacias</i> &c.
2 September 1898	RD Hay Forest Branch Lands Department Sydney Re supplying of <i>Acacia Maiden</i> seeds, and applying for seeds.
6 September 1898	Serle and Sons 86 King Street Sydney Applying for seeds of <i>A.cyanophylla</i>
27 September 1898	Director, Botanic Gardens, Melbourne Asking for seeds of <i>Acacia Baileyana</i>
30 September 1898	A G Neale, Botanic Gardens, Melbourne Asking for seeds of <i>Acacia vestita</i>
3 October 1898	N R Chisholm Prairie Plains, Prairie Queensland Forwarding of <i>Acacia</i> specimens and pods
1 December 1898	A R Crawford Moona Plains Respecting description of an acacia.
5 December 1898	Undersecretary of Lands, New South Wales Forwarding a packet of pods of <i>Acacia maiden</i>

Regulation, licensing and government intervention failed to secure the commercial viability of the crop in Australia that both the Wattle Board in the 1870s and Maiden in the 1890s had anticipated. Landholders in New South Wales, such as Mr William Neilly of Bega planted seeds, and by all accounts some wattle plantations arose from this work.⁷⁰ As a business,

⁷⁰ Maiden, *Wattles and Wattle-Barks, Being Hints on the Conservation and Cultivation of Wattles Together with Particulars of Their Value*, 3.

however, wattle-growing was never more than a small-scale cottage industry.⁷¹ By the turn of the century, tannin bark was being imported for use in the domestic market, rather than exported for profit. In particular, the indiscriminate stripping had remained a feature of the supply and the board and advice from Maiden had failed to see cropping undertaken on anything like the scale they recommended. Maiden identified one of the problems for English Leather Traders as moisture in the batches sent to England. No care had been applied to the process of stripping, drying and distribution, and for Maiden this meant that the principles of scientific management had been ignored.⁷²

When Maiden took up his position in the Sydney Botanic Gardens, he came as the author of two texts about Australian botany. The first was his *Useful Native Plants of Australia* and the second was his *Wattles and Wattlebarks*. The first two editions of this second work were completed and published in 1890 and 1891 respectively while Maiden was still curator at the Technological Museum. The third edition on the other hand was published in 1906 and was a substantial revision of the first two editions. In between these dates, Maiden's access to and position in the transnational botanical information network had substantially shifted. Instead of simply publishing and circulating this text, Maiden also used the resources available at the Sydney Botanic Gardens to make wattle move into a range of different sites. This was not simply reliant on the written word, but instead also relied on the movement of seeds and plants within Australia and outside of Australia.

⁷¹ Searle, "The Rise and Demise of the Black Wattle Bark Industry in Australia."

⁷² Maiden, *The Useful Native Plants of Australia (Including Tasmania)*, 302-05.

Transoceanic Travel

Even as Maiden and the Sydney Botanic Gardens championed the wattle, the fundamental work of this place as an institution of colonial science meant that the wattle did not stagnate as either an Australian economic product OR a symbol of nationalism. While the new contribution to science of Maiden's pamphlet *Wattles and Wattlebark* was the delineation of the tannin content, he had also used this publication as a point by point guide on how wattle plantations could be established and what requirements were needed to sustain such commercial stands. Maiden sent his pamphlet out to places and people all over the world, both within and outside of Australia. What the botanical network additionally allowed, and Maiden capitalised upon, was his inclusion of plant material as well as the information. Packets of seeds, seedlings, and herbarium specimens also travelled with *Wattle and Wattlebarks*. In this way, Maiden did more than just supply the advice about how the tanning industry could be developed and whether wattle tannins were chemically superior to other plants. The inclusion of *A. pycnantha* and *A. decurrens*, the best of the Australian wattles for tannin content, provided the possibility of environmental change both in Australia and other settler locations throughout the world. Bundles of wattle, wattle material and wattle information found their way into Russia, India, Hawai'i, California, Argentina and Canada.

One of these paths saw wattle, wattle material and wattle information shift from Australia to South Africa.⁷³ At the very same time that wattle became an icon of Australian nationalism, it became an exotic with the potential to seed a new export industry in a geographic location that scientist agreed had enough similarities to be viable.⁷⁴ *Acacia mollissima* first moved to the Natal Botanic Gardens in 1878, with *Acacia dealbata* being made available for sale in

⁷³ Ann Milligan, "Historic Black Wattle," *Trees and Natural Resources* (1994): 13.

⁷⁴ John Medley-Wood, "Canaigre," in Report on Natal Botanic Gardens for the Year 1895, 16-26.

1880 by the curator Willam Keit.⁷⁵ The later curator John Medley Woods actively distributed the wattle to various places and farms proximate to Durban in the Natal area.⁷⁶

When plants, plant material and plant information are mobilised into these sorts of networks by scientists like Maiden, they took on a life of their own. As an industry, cropping wattle never gained momentum in New South Wales. Where the Australians had been reluctant or unable to heed the advice of the scientists, South Africans showed no such unwillingness. The Pietermaritzburg Botanic Gardens were operative from 1874, connecting into the global network as part of the settler colony in South Africa.⁷⁷ This place quickly oriented its work to forestry and timber industry, planting out a large section of their parkland with timber trees. Two of the plants that travelled through Pietermaritzburg Botanic Gardens in large quantities were wattle and eucalyptus.⁷⁸ This Botanic Garden largely survived on the sales from its nursery; one of their main seedlings stock was Acacias.⁷⁹ Wattle and wattle material from central New South Wales travelled through the Sydney Botanic Gardens where it collected wattle information, and transited to the Pietermaritzburg Botanic Gardens shifting yet again and ending up in local mist belt of the East Coast region of Natal.

South African agriculturalists developed three strategies that were missing in Australia. Firstly, they paid heed to the creation of plantations of wattle, neatly rowed, thinned and

⁷⁵ William Keit, "Curator's Report, Natal Botanic Gardens for 1878," Natal Agricultural and Horticultural Society, Durban (1879), 4, William Keit, "Curator's Report, Natal Botanic Gardens for 1880," Natal Agricultural and Horticultural Society, Durban (1880), 2.

⁷⁶ Sherry argues that Medley Woods was distributing wattle seed from the Durban Botanic Gardens in the 1860s, however the reports of the Natal Botanic Gardens are authored by Medley Woods as the curator from 1883. Donal P McCracken and Eileen McCracken, *The Way to Kirstenbosch* (Pretoria: National Botanic Gardens, 1988), 68.

⁷⁷ McCracken, *Gardens of Empire: Botanical Institutions of the Victorian British Empire*, 211.

⁷⁸ McCracken and McCracken, *The Way to Kirstenbosch*, 88.

⁷⁹ *Ibid.*

pruned as required, mulched and tendered until ready for harvest. The optimum time for this was ten years with 10% of crops being harvested then replaced each year. This was a method advocated in continental forestry, and ensured sustainable income following a period of establishment of the trees. By the 1890s, many farmers in the Natal region had incorporated the scientific management of wattle into their agricultural practices. Hence, rather than using ad hoc access to crown land as they had in Australia, wattle became a staple in some farms and an element of mixed farming in others in the manner set out by Maiden.

The second feature of South African farming method was stable, cheap and readily available labour. From the 1850s until 1917, Natal used indentured Indians from Madras and Calcutta as coolie labour rather than indigenous, Afrikaans or British labour. These peoples were primarily indentured to the sugar industry, working in the fields and in the mills of this region. Indentured labourers were contracted for five year terms, with the option to recontract, repatriate or stay on in Natal as free immigrants. As the scheme developed into the 1880s, Natal saw a mix of indentured and free Indians living in both urban and rural areas. While up to 80% of these workers were contracted to sugar, the remaining 20% dispersed into a range of other agricultural and small business pursuits. Wattle plantations were one of the options for these workers at an indentured rate of two shillings per day.⁸⁰ The 1909 Indian Immigration Commission reported that without indentured Indian labour, wattle growing amongst other industries was under threat of abandonment.⁸¹ In addition to the indentured labour, native peoples also found a place for work in the wattle industry. The extraction factory at Melmoth used a native workforce for the unskilled component of their operations

⁸⁰ Hamilton Fyfe, *South Africa to-Day: With an Account of Modern Rhodesia* (London: Bell, 1911), 161.

⁸¹ Henry Bale, "Report of the Indian Immigration Commission," (Pietermaritzburg: Natal Legislative Assembly, 1909), 637-38.

and paid them in board and rations, rather than the meagre wages paid to the Indians.⁸² A steady supply of bark was matched with a steady supply of exploited labour that displaced indigenous people mirroring the relationship between introduced species dispossession in Australia.

Additionally, South Africans experimented with different sorts of technology, including light rail, purpose built drying sheds and a willingness to strategically place extraction plants relatively close to the plantations themselves. All of these features had been recommended by various Australian botanists and foresters, including Maiden. The Natal Tanning Extract Company was one of a number of organisations that used an integrated model in their approach to the production of tanning extract. They invested in both land for plantations and set up factories proximate to the farms.⁸³ The Town Hill Wattle Company incorporated tramways to transport bark to rail heads, and additionally developed drying sheds that allowed farmers to protect the drying wattle from damaging mist and rain; with concertina-ed drying racks being moved in and out of the sun as needed.⁸⁴ In their survey of the South African industry A J O'Connor and I J Craib found that the large plantations, being those with acreage between 2,000 and 6,500 all 'constitute(d) a working circle, and support(ed) its own bark mill and plant for the sawing of mine props and firewood.'⁸⁵

While some of the bark produced was used in the local boot and shoe industry, such was the success of these plantations that the bulk went overseas to meet a growing global demand. In

⁸² E Thorrington-Smith, *Tugela Basin Regional Survey* (Pietermaritzburg: The Natal Witness, 1952), 107.

⁸³ J Henderson, "Wattle-Growing in South Africa," *The New Zealand Journal of Science and Technology* (1930): 52, "A Thriving Wattle Plantation," *New South Wales Agricultural Gazette* (1900).

⁸⁴ "A Thriving Wattle Plantation."

⁸⁵ AJ O'Connor and I J Craib, "Syvicultural Investigation of the Black Wattle (*Acacia Mollissima* Willd.)," *South African Journal of Science* 26 (1929): 246.

1886, the value of the export crop from Natal was £11, but by 1903 this had increased to £70,581.⁸⁶ Australia, on the other hand, only managed to export £63,732 in 1900.⁸⁷ In 1902, South Australian, Fred Wright explained in the *Journal of Agriculture and Industry South Australia*, that in the six years between 1896 and 1901,

South Africa had increased her export of wattle bark by 8,418 tons, whilst South Australia has decreased by 2,795 tons.⁸⁸

South Africans created a new wattle industry based on plantation agriculture. By 1905, South Africans were able to export wattle bark back to Australia for use in its domestic industry. Jared Smith of the Hawai'i Agricultural Research Station, hailed South Africa as the country that 'produced the bulk of the world's supply.'⁸⁹ This caused some consternation in Australia, where one newspaper suggested that Australians should 'blush with shame' at this 'bad miss for New South Wales.'⁹⁰ Edward Sorenson pointed out that South Africa selected the wattle as their emblematic flower at the time of the coronation of King George V in 1911.⁹¹ This was at the same time that the Wattle League was sowing the seeds of the wattle for a crop of Australian patriotism and sentiment. Plants, it seems, bear no special national allegiance!⁹²

The multiple transnational networks which form around the wattle show, as Nigel Thrift suggests, that 'the "material" and the "social" intertwine and interact in all manner of

⁸⁶ Fred S Wright, "Wattles and Wattle Bark," *Journal of Agriculture and Industry South Australia* (1902): 940, A H Grey, ed., *The Cultivation of Wattle and Wattle Bark Comprising the Most Interesting and Instructive Extracts Gathered from the Best Authorities on This Subject* (Sydney: William Brooks & Co, 1909), 7.

⁸⁷ F W Vickery, "Wattle Cultivation," *Journal of Agriculture and Industry South Australia* (1901): 60.

⁸⁸ Wright, "Wattles and Wattle Bark," 940.

⁸⁹ Jared G Smith, "The Black Wattle (*Acacia Decurrens*) in Hawaii," in RBGS Library (nd), 8.

⁹⁰ Grey, ed., *The Cultivation of Wattle and Wattle Bark Comprising the Most Interesting and Instructive Extracts Gathered from the Best Authorities on This Subject*, 8.

⁹¹ Edward S Sorenson, "The Wattle: Australia's National Flower," *The Lone Hand*, September 1912.

⁹² The giant or King Protea *Protea cynaroides* became the South African national flower.

promiscuous combinations.⁹³ The Sydney Botanic Gardens access to transnational networks enabled the mobilisation of botanical knowledges which multiplied the sites into which wattle travelled. These sites of settlement were not confined to Australia alone, but include other places that sought out the usefulness of wattle as economic botany. The Sydney Botanic Gardens were not simply interested in supporting settlement through agriculture, or pastoralism, but were also able to use a command of botanical knowledges for symbolic associations. Metaphors of plant life were equally determined through the collections at the Sydney site at the same time as the physical movement of seeds and science.

There was another aspect to the life of wattle in South Africa. At the same time that they became useful, cropped into neat lines, yielding a product for manufacture and export ... they also became weeds.

⁹³ Nigel Thrift, *Spatial Formations* (London: Sage Publications, 1996), 24.

Chapter Seven

Transnational Street Trees

Between the 1890s and 1920s, street trees became a prominent feature in streetscapes across New South Wales.¹ The Sydney Botanic Gardens, with their extensive nursery system, were responsible for supplying seedlings to councils and municipalities for use as street trees. As such, this institution was significant in determining the concept of the street tree, how it should be used and what plants were best suited to this particular use in urban environments. This chapter analyses the nurturing of this use of street trees by the Sydney Botanic Gardens and the Director Joseph Maiden. This institution was a place that provided not just stock and seedlings, but developed ideas about how nature's inclusion into urban environments had the capacity to influence and enhance the cultivation of civilised citizens. This was influenced by access to transnational resources available to the Sydney Botanic Gardens.

As an independent agency within the New South Wales government, the Sydney Botanic Gardens were able to spearhead a public campaign that changed local urban aesthetics. This meant providing towns and cities across the state with tree stock for planting into public places, including streets. One of the reasons that trees were used in streets was because they

¹ This chapter is a substantially extended version of the article will be published as Jodi Frawley, "Campaigning for Street Trees, Sydney Botanic Gardens, 1890s to 1920s," *Environment and History* (forthcoming).

were thought to have a civilising influence on citizens of the city. This was not a local idea, but one that had gained momentum in a variety of locations across the globe. Street trees were entangled with the history of the development of urban planning and specifically the use of the street to bring about social change. A very distinctive pattern emerged that emphasised a particular shape and image of a tree planted that enhanced urban linearity. While the rhetoric used in this campaign suggested that the intended outcome was to civilise towns for national purposes, this was carried out through a transnationalising of ideas and plants. This chapter takes up this point by considering how the Sydney Botanic Gardens' Director, Joseph Maiden, used transnational resources to construct this element of cultural nationalism in Australia.

The Sydney Botanic Gardens always had a thriving nursery and propagation ground. This nursery had acclimatised and supplied stock for the parklands of the institution. By the 1890s, a state nursery at Campbelltown was established as a satellite of the Sydney Botanic Gardens to complement the second state nursery in Gosford managed by the Forest Branch of the Department of Lands. These nurseries were established in response to the needs of the forestry sector. Approximately two and half million plants were distributed from the Sydney Botanic Gardens nurseries between 1896 and 1924. Most years, this meant that around one hundred thousand plants were sent to public institutions including schools, prisons, railway stations, court houses and churches. One of the places that free saplings from these nurseries regularly made their way was into municipalities and councils' urban landscaping, both for parks and for streetscapes. This aspect of the work of the botanic gardens was often stated amongst the duties and functions performed in Sydney, but has not been scrutinised to any

extent.² Such work placed the Sydney Botanic Gardens in a prime position in the creation and influence of the everyday streetscapes of urban New South Wales.

Over the twenty eight years of Maiden's tenure, one area of interest was his engagement with the more generalised movement for the improvement of urban planning. He took up the aspect that pertained to his field of expertise championing and enacting the planting of trees into streets across New South Wales. Although an avid nationalist, Maiden drew from a transnational network of botanical exchange in working with ideas about street trees. Such a network began with correspondence as the infrastructure through which plants, plant material and plant information moved. Throughout Maiden's Directorship, members of the public were encouraged to correspond with their questions about botany. In 1910, for example, Maiden received requests for information on themes as varied as Australian edible nuts and how to propagate wilga (*Geijera parviflora*) seed. Included were requests for information about tree-planting, pruning, distribution and avenue-planting for streets.³

Within Australia, Maiden developed corresponding relationships with forestry conservators of the different states, including John Ednie Brown who worked in Western Australia, South Australia and New South Wales; George Perrin of Victoria and Walter Gill of South Australia. All of these men were interested in fostering an appreciation of trees and were instrumental in initiating Arbor Day programmes in public schools. In 1891, Ednie Brown pointed to Strathfield and Homebush, suburbs of Sydney, as 'commendable beyond degree' with

² See Gilbert, *The Little Giant: The Life and Work of Joseph Henry Maiden 1859-1925*, 246, 48, 72.

³ Maiden, "Report on Botanic Gardens and Domains, &C. For the Year 1910," 3-4.

regards the use of trees in avenue plantings.⁴ Such relations facilitated the movement of trees and publications about street planting. This transnational network enabled Joseph Maiden to collect journals, books and reports that advocated this type of planting for the Sydney Botanic Gardens library. His vision for street tree planting was an amalgam of the ideas that he found in this research. This image, understood by Maiden through the transnational transfer of information, was the primary concept underlying the greening of townships across the state.

Planning Antecedents

Street trees can be spatially understood alongside various sorts of public planting, public gardens and parks that emerged consistently by the mid-nineteenth century across Europe. As other historians have shown, these inclusions did not begin in the mid nineteenth century, but appear in a piecemeal way across the cityscapes of Europe from at least the mid sixteenth century.⁵ Helen Armstrong argues that the introduction of street trees in Australia relied upon antecedents in the European sphere.⁶ The desire for the city to provide a utopian setting for activities developed progressively through the work of French planners Abbe Morelly (1750), Abbe Laugier (1753) and Pierre Patte (1765, 1783). Such planning relied on the formal arrangement of streets and squares with trees. According to Armstrong, this type of planning was transferred to the new settlement in Australia with the First Governor Arthur Phillip and was identified by Armstrong as forming the conceptual basis for the laying out of streets in Sydney. Over the following century, however, Sydney developed in an ad hoc manner with a myriad of unplanned accretions that triggered Paul Ashton to describe Sydney as an

⁴ John Ednie Brown, "Aboricultural Lecture Issued in Connection with Arbor Day," in *Catalogue of Trees at Gosford Nursery* (Sydney: 1891), 4.

⁵ Henry Lawrence, *City Trees: A Historical Geography from the Renaissance through to the Nineteenth Century* (Charlottesville and London: University of Virginia Press, 2006), Mumford, *The City in History: Its Origins, Its Transformations and Its Prospects*.

⁶ Helen Armstrong, "18th Century Influences on Early Street Planting in New South Wales," *Landscape Australia* 3 (1985): xxi.

'accidental city.'⁷ The inner city developed in an improvised fashion making a mockery of any plan envisioned by Phillip.

Lynette Finch argues that over the nineteenth century, the multifunctional street formed as part of this unplanned city, especially where urban populations increased through industrialisation.⁸ These streets tended to develop as dark narrow alleys with dead ends, patched together organically as need arose. In the urban sectors where the underclasses lived, horses, carts, people, garbage, and sewerage all vied for a claim on this space. Furthermore, the street was a place where working class and underclass communities gathered and socialised, not as a space to move *through* but as a place to *be*.⁹ These types of streets were identified in Sydney by a range of social surveys conducted in the mid-nineteenth century.¹⁰ It was this sedentary gathering of one class that was set against the emerging recreational activities of another. During this period in Europe, the mercantile and aristocratic classes started to claim city spaces for carriage riding, promenading and games like croquet and pall mall.¹¹ These activities could not take place if the streets remained multifunctional.

⁷ Paul Ashton, *The Accidental City: Planning Sydney since 1788*, Sydney History Series. (Sydney: Hale & Remonger, 1995), Shirley Fitzgerald, *Sydney: A Story of a City* (Sydney: City of Sydney, 1999).

⁸ Lynette Finch, "On the Streets: Working Class Youth Culture in the Nineteenth Century," in *Youth Subcultures: Theory, History and the Australian Experience*, ed. R. D. White (Hobart: National Clearinghouse for Youth Studies, 1993), Jodi Frawley, "'Haunts of the Street Bully': Social Reform and the Queensland Children's Playground Movement," *History of Education Review* 29, no. 1 (2000).

⁹ Alan Mayne, "Contingency: Municipal Slum Clearance in Sydney, 1879-1900," in *The Imagined Slum: Newspaper Representation in Three Cities, 1870-1914* (Leicester: Leicester University Press, 1993), Briggs, *Victorian Cities*, Graeme Davison, David Dunstan, and Chris McConville, *The Outcasts of Melbourne: Essays in Social History* (Sydney: Allen & Unwin, 1985), James Donald, *Imagining the Modern City* (London: The Athlone Press, 1999), Lynette Finch, *The Classing Gaze: Sexuality, Class and Surveillance* (St. Leonards, NSW, Australia: Allen & Unwin, 1993).

¹⁰ See for example, W.S. Jevons, *A Social Survey of Australian Cities – Remarks Upon a Social Map of Sydney, 1852* and Report of the Select Committee to Enquire on the Condition of the Working Classes of the Metropolis, New South Wales Parliamentary Papers Legislative Assembly, 1859-60.

¹¹ Henry Lawrence, "Origins of the Tree-Lined Boulevard," *The Geographical Review* 78, no. 4 (1988), Lawrence, *City Trees: A Historical Geography from the Renaissance through to the Nineteenth Century*.

Streets were no longer places for lingering but were perceived as functional and rational spaces of movement by a new class of professionals concerned with planning in the city. One of the most famous forays into the reorganisation of the social and political life of the city through urban planning was in Paris in the 1850s. This restructuring of the city was famously undertaken by Napoleon III's Prefect of the Seine, Baron Haussmann. The use of city space in Paris became iconic, providing a watershed moment in the use of urban planning to include new technologies and direct social change. In Paris it wasn't just a case of including parks, as happened in London and New York, but integrating an axial plan of boulevards, and place promenades¹² with its own symmetry. These boulevards and streets were distinctively planted out with avenues of trees. The tree-lined boulevard became a symbol of the modern city whose architects and engineers provided the capacity for controlling social activity by planning the fabric of the city.¹³ At the same time, road and sanitation engineering were introduced into the Paris urban form.

A symmetrical form helped to contain activity, separating vehicular traffic from foot traffic, whilst directing walkers towards the shop fronts and window displays that had started to appear at this time. Haussmann imposed this order over the mediaeval structure of the city. The rhetoric used by Haussmann, and later adapted in places like Chicago and Sydney, revolved around the capacity for 'orderly public architecture to promote harmonious social relations.' Daniel Hess argues: 'If industrialization and unmanaged urban growth were responsible for fragmenting cities, then new civic centers were planned to unite alienated

¹² Henry Lawrence uses the French term 'place promenade' for what might be more commonly known as a square. He uses Place Royal and Place de Vosges in Paris and Covent Garden in London as examples of this type of urban infrastructure. Lawrence, "Origins of the Tree-Lined Boulevard," 363-64.

¹³ Allan B. Jacobs, Elizabeth Macdonald, and Yodan Rofé, *The Boulevard Book: History, Evolution, Design of Multiway Boulevards* (Cambridge, Mass.: MIT Press, 2002), W Robinson, *The Parks and Gardens of Paris Considered in Relation to the Wants of Other Cities and of Private and Public Gardens* (London: McMillan and Co., 1878).

classes and ethnic groups around common civic endeavours and cultural institutions.¹⁴ These cultural institutions included libraries, parks and museums as places of learning, regulation and surveillance.¹⁵ Uniting in this sense was really about erasing difference, particularly if it was politically threatening. Walter Benjamin argued that Haussmann was enacting a 'strategic beautification'¹⁶ that gave new meaning to 'a nineteenth century tendency, to enoble technical exigencies with artistic aims.'¹⁷ Beauty and technique combined to serve a political end.

These streets civilised the city in three ways. Firstly, the imposition of a street changed the capacity for resistance to governance. What were thought to be locales of political interaction were simply bulldozed and replaced with zones for leisure, consumption and play. Such streets facilitated the traffic of and for commercial life. The wide boulevards of Paris also made it easy for the military to march through the city, straight from barracks to the working classes, and were supposed to be too wide to blockade, although this was proved erroneous by the Paris Commune of 1871. Each of these cases was about providing safe passage – about moving *through*. Secondly, the new boulevards included the provision of channel and kerbing, storm water drainage, sewers, gas lines and gaslights.¹⁸ The introduction of these technologies countered and controlled the effects of air-borne and water-borne disease. In 1926, the town planning association of New South Wales recommended a visit to Grafton to view

¹⁴ Daniel Baldwin Hess, "Transportation Beautiful: Did the City Beautiful Movement Improve Urban Transportation?," *Journal of Urban History* 32, no. 4 (2006): 517.

¹⁵ Tony Bennett, *The Birth of the Museum: History, Theory, Politics* (London: Routledge, 1995), Michel Foucault, *Discipline and Punish the Birth of the Prison*, trans. Alan Sheridan (London: Penguin Books, 1977), Hoskins, *Cultivating the Citizen: Cultural Politics in the Parks and Gardens of Sydney, 1880-1930*, Karsten Schubert, "Paris and London 1760-1870," in *The Curator's Egg: The Evolution of the Museum Concept from the Revolution to the Present Day* (London: One-Off Press, 2000).

¹⁶ Walter Benjamin, *Charles Baudelaire: A Lyric Poet in the Era of High Capitalism*, trans. Harry Zohn (London: NLB, 1973), 175.

¹⁷ *Ibid.*, 173.

¹⁸ Donald, *Imagining the Modern City*, 46.

the trees. They said 'The beautiful tree lined avenue provides shade and shelter, but the trees are health-giving to the locality and perform the important function of collecting the dust and so keeping the houses behind almost free of road-dirt and germs.'¹⁹

These innovations responded to the growing need for public health concerns to be incorporated into city planning. Hygiene, although here articulated as a way of providing clean environments, was intrinsically linked to morality and civilised behaviour. Thirdly, through the occupation of these newly created city spaces, the middle classes could both model civilised behaviour and survey inappropriate behaviour. As the new city form opened up the streets to light, both natural and artificial, it also opened them up to surveillance. Hence, while Haussmann spoke of bringing order, changing the aesthetic and making Paris more beautiful, what this additionally meant was the dispersal of the working and underclasses that represented a whole range of perceived threats – political, hygienic and moral – to the governance of Napoleon III. The trees that lined the boulevards that Haussmann and his 'landscape architect'²⁰ Adolphe Alphand included into Paris streetscapes were sentinels for a city form that was taken up in many places in Europe, Africa, the Americas, Asia and Australia.

From the 1890s until the mid 1920s, planting of street trees became a more popular inclusion in urban landscaping in Australia beyond the capital cities. By this time, street trees could also be found in urban landscaping in England, France, Holland, and Germany. They spread into colonial life as well – in Spanish Manila, Dutch Batavia, French Pondichéry, British

¹⁹ "Grafton's Railway Problem," *The Commonwealth Home* 1926, 13.

²⁰ This is not a term that would have been used at this time – the 'first' landscape architects, claimed by urban historians, are American – Andrew Downing, Calvert Vaux and most importantly Frederick Law Olmstead.

Calcutta and Dutch South Africa. America too saw the rise of street tree planting in the late nineteenth century. Washington's avenues were planted out with pin oaks, lindens and elms in the 1880s.²¹ This was not just a European fashion, but one that extended, as Henry Lawrence has shown, to places and cities across the globe.²² In order to introduce this urban aesthetic into these various locations, towns and cities needed advocates for urban landscaping, as well as access to stock that could be used to create new streetscapes.

If this geographic distribution of street trees was considered in conjunction with a list of globally located botanic gardens, delineated to some extent by Donal McCracken's *Gardens of Empire*, an interesting pattern emerged.²³ The botanic gardens, most of which were established in the nineteenth century, were located in similar colonial settings that eventually had trees in their streets. This information alone was not enough to suggest a correlation. However, botanic gardens, whether located in Europe, or the colonies, more often than not had nurseries and propagation houses that constituted a portion of the operational functions of the places. Botanic gardens, along with acclimatisation societies, agricultural societies, commercial nurseries and private gardeners all partook in a nineteenth century transfer of exotic plants into colonial Australia. Colonial bureaucracies logically turned to their botanic gardens rather than commercial nurserymen to provide appropriate plants for local use, for the simple pragmatic reason of free supply. Contributing trees for street planting was a common task across this network of places.

²¹ William Solotaroff, *Shade-Trees in Towns and Cities: Their Selection, Planting and Care as Applied to the Art of Street Decorations: Their Diseases and Remedies; Their Municipal Control and Supervision* (New York: John Wiley and Sons, 1911).

²² Lawrence, *City Trees: A Historical Geography from the Renaissance through to the Nineteenth Century*.

²³ McCracken, *Gardens of Empire: Botanical Institutions of the Victorian British Empire*.

Wherever there was a nursery that received stock from a myriad of international sources, botanic gardens were also expected to provide plants for local urban landscaping. This was as true of outposts such as Rockhampton Botanic Gardens in Queensland²⁴ or Peitermaritzburg Botanic Gardens in South Africa,²⁵ as it was for the Royal Botanic Gardens, Kew.²⁶ In Victoria, Roger Spencer has identified the importance of the local botanic gardens in supporting two different phases of street tree planting in Melbourne.²⁷ In addition to this civic function, botanic gardens were able to exchange seeds and plant stock which could be used in the nurseries under their charge. As colonial institutions, botanic gardens became one of the centres that moved notions of street form and function into the colonies. In New South Wales, this wasn't always a case of dealing with existing city form, as it was in Europe, or India. Instead the settlement of this colonial site was very much in formation. Many of the municipalities and councils of New South Wales were only recently gazetted in the 1880s.

The development of rural industries saw improved infrastructure, rail and road accompany closer settlement. As rural populations grew, it also saw the establishment and growth of towns surveyed and dotted across the state. Towns provided a range of hub services for rural industries including banks, stores, and hotels. What they also provided were zones of exclusion for indigenous people, who found by the 1890s that they had no rights of access to many of the facilities that white settlers enjoyed.²⁸ By the 1890s, towns were no longer projections on the surveyors' map: instead homes, schools, court houses and other buildings, parks, and street life made material the dreams and aspirations of settling New South Wales.

A survey of photographs indicates that prior to the 1890s trees were *less* likely to be used in

²⁴ Frawley, Rockhampton Botanic Gardens History.

²⁵ McCracken and McCracken, *The Way to Kirstenbosch*, 78-84.

²⁶ Desmond, *Kew: The History of the Royal Botanic Gardens*, 181-82.

²⁷ Roger Spencer, "Fashions in Street Tree Planting in Victoria," *Landscape Australia* 4 (1986).

²⁸ Goodall, *Invasion to Embassy: Land in Aboriginal Politics in New South Wales, 1770-1972*, 92.

street plantings. Trees often overhung fences and property boundaries creating the impression that they belonged to the spatial patterning of the street whilst being contained as part of a garden. After this time, photographic evidence suggests that tree-lined streets became far more prevalent.²⁹

Campbelltown and Farm Cove Nurseries

In the same way that the state provided other sorts of infrastructure, it also assisted in the improvement of the urban aesthetic. By 1905, Maiden articulates the distribution of plants for public purposes as ‘a matter of state policy.’ He says:

The officers charged with the distribution of the plants endeavour to inflict as little hardship on nursery men as possible, but the policy of the Government is based on the knowledge that in most cases unless the State gave some assistance, trees &c. would not be planted at all.³⁰

Such assistance was in the provision of trees. Plants were provided free-of-charge to any public institution that required them. This largely consisted of state operated institutions. The local police station, railway stations, post office and hospitals all received stock from Campbelltown nursery of the Sydney Botanic Gardens. In addition, public schools received consignments of trees. Municipalities and councils made up the remainder of places who received stock. Each of these sites made up the fundamental bureaucratic presence in towns. If towns were to be hubs for rural development then they required the provision of justice,

²⁹ I conducted a survey of approximately 1000 images of ‘trees’ in the State Library of New South Wales digital photographic library: Picman. While I am unable to wholly attribute this to Maiden or the Botanic Gardens, I hope to show that institutions who provided the stock for planting both directed the idea of street trees and its physical implementation. The Sydney Botanic Gardens was one of these places.

³⁰ Joseph Maiden, "Forestry: Some Practical Notes on Forestry Suitable for New South Wales," *New South Wales Agricultural Gazette* 16 (1905): 56.

health and communication centres to service their growing populations. The state, in providing trees, was providing the means by which an aesthetic gloss was applied to these places to make them more civilised.

On the other hand, private places, groups and institutions were excluded from access to this stock. This meant that homeowners could not apply for plants for their gardens, and private firms could not apply for plants to beautify commercial premises. This distinction between the supply to public and private land occupiers had been established in the Sydney Botanic Gardens since 1855 when a Select Committee had reported that 'as a general principle ...no seeds and plants shall in future be distributed from the Garden, which are procurable from private nursery gardens.'³¹ This policy, continued through to the 1920s, protected the right of nursery men to maintain a market for their goods. The street provided a boundary between the intervention of the state into sustaining a civilised environment and the rights of commerce and home ownership. Although Maiden fielded regular requests from private individuals for free stock, he was obliged to confine his distribution to the civic sphere.

Procedurally, groups requiring plants could send applications to the Sydney Botanic Gardens. Maiden asked that they include information on soil, climate and the area of land required for planting but they were not able to request particular species of plants. He says: 'Every care is exercised to send a selection of plants suitable to the district, but such plants as palms, camellias, roses, ... bulbous and herbaceous plants generally, and seeds cannot be issued.'³²

³¹ Minutes of Evidence, "Select Committee on the Botanic Gardens," 10 August 1855, Votes & Proceedings New South Wales Legislative Assembly, 1139.

³² Maiden, "Forestry: Some Practical Notes on Forestry Suitable for New South Wales."

He even refused to provide lists from which varieties could be selected.³³ Over the course of Maiden's directorship, the major sites that received plants altered. Early in his term, the dominant recipient of consignment of trees were the public schools. This corresponded with Maiden's support of Arbor Day activities for school children.³⁴ As his public campaign for street trees gained momentum over the years, the municipalities and councils received the majority of consignments of trees.³⁵

Decisions made about which plants to send rested with the State-run nurseries. In this, he attempted to ensure that the control of this distribution was shared between his own nurseries in the Sydney Botanic Gardens, and the State Nursery at Gosford. Propagation was geared towards a mass distribution of plants in August and September, allowing local bodies to plant out in spring. This effort on Maiden's part was complicated by the varied scales of governance pertaining to these places. Both nurseries were answerable to the State, but municipalities and councils were responsible for street planting and the consequent care and maintenance of the resultant trees. This was part of the reason that Maiden provided meticulous detail in a range of publications, newspaper articles and Royal Commission evidence³⁶ on the process of preparing ground, planting, manuring, making guards, nurturing, pruning and generally caring for the trees that he sent out to these towns. He had no control

³³ Ibid.

³⁴ ———, "Acacia Burkittii, F.V.M. Burkitt's Wattle.", Joseph Maiden, "A Chat About Wattles: An Object-Lesson Written for New South Wales Children," *Agricultural Gazette of New South Wales* (1898). For Arbor Day, Robin, "Nationalising Nature: Wattle Days in Australia."

³⁵ Maiden, "Annual Reports on Botanic Gardens and Domains."

³⁶ Thomas Hughes, "Royal Commission for the Improvement of the City of Sydney and Its Suburbs," (Sydney: New South Wales Parliamentary Papers, 1909), Alexander Kethel, "Royal Commission on Forestry Minutes of Evidence," *New South Wales Parliamentary Papers* 1908 (1907), Joseph Maiden, "Our Parks. The Philosophy of Pruning and Eradicating Trees," *Sydney Morning Herald* 1906, Joseph Maiden, "Our Parks: Lighting; Sanitary Matters: Police and Traffic Regulation," *Sydney Morning Herald*, 3 August 1905, Joseph Maiden, "Our Parks: Seats, Fences, Roads and Paths," *Sydney Morning Herald*, 31 March 1906, Joseph Maiden, "Our Parks: Pavement Gardening, Plantations, Grass," *Sydney Morning Herald*, 20 January 1906, Joseph Maiden, "Our Parks: How to Plant and Tend a Tree," *Sydney Morning Herald*, 4 May 1907, Joseph Maiden, "Tree Planting in the City Streets," *Sydney Morning Herald*, 6 May 1905.

over the trees after they left his nursery, but believed that if he supplied good clear instructions councils would have the means, in both stock and information, to green their towns.

Under this system, Maiden avoided sending cold climate trees to their death in arid places like Bourke. This was especially important in a state with such a wide variety of geographic and climatic environments. In response to this, Maiden developed a zonal map of New South Wales to account for these differences in geography. He considered the geology, the types of vegetation cover, the rainfall and the climatic variation and identified five divisions:

- 1) The cold region, consisting of the north and south tablelands — here British trees flourish;
- (2) the coastal strip;
- (3) the Northern Rivers, a distinctly sub-tropical belt, forming the north-eastern portion of the State;
- (4) the Western Slopes and Riverina;
- (5) the Western Plains.³⁷

This knowledge was accumulated from travelling through New South Wales and regularly asking for information from correspondents about the suitability of different trees to different areas.

In his first year as Director, he sent a circular through his correspondence network, both internal to the government and to all others, requesting advice about the plants that thrived in particular local districts. He also requested 'notes on soil, aspect, moisture.'³⁸ This was specifically so that he could collate the information and use that knowledge to send

³⁷ Joseph Maiden, "Tree Planting for Shade and Ornament in New South Wales with Especial Reference to Municipal Requirements," in *The Forest Flora of New South Wales*, Vol 6 (Sydney: William Applegate Gullick, 1911), 300.

³⁸ Maiden, "Report on Botanic Gardens and Domains, &C. For the Year 1897," 8.

appropriate trees. This circular elicited responses in 1897 from the council clerk, waratah; the court-house keeper, Grafton and the sheriff's office, Young.³⁹ In addition to these government employees, F W Beatson, Woolongong, J Doherty of Wee Waa and M Black of Cumnock all replied. J B Nicholson, Member of Parliament, responded with information about Bulli and St Joseph's Convent provided details about Perth NSW. Collating this information allowed him to advise whether a tree was suitable for the town of Cooma at the base the alpine region, or conversely whether the same tree was not suitable to send to Maclean in the coastal river region of northern New South Wales.

One of the ways that he tested the adaptability of trees to Australia was to plant and rear them in the Sydney Botanic Gardens site. Singular specimens took pride of place within the landscape created by Maiden and his staff. The traffic in seeds, cuttings, and seedlings across borders meant that Maiden was able to grow a full range of trees from all continents. Such trees were scattered throughout the park-like settings of the lower gardens. This didn't mean that everything that Maiden grew was successful. Some trees grew to maturity, others failed to thrive at all. Maiden translated this adaptability, or lack of it, to information regarding the suitability of trees to different geographic locations. Of the Indian Cedar *Cedrus deodora* he says: 'A noble tree, native of the mountains of Afghanistan, Baluchistan, and north-west Himalaya. This is the *Cedrus* most generally useful in New South Wales as an avenue or specimen tree.'⁴⁰ On the other hand, of the plane tree, used extensively in Europe and America, he noted that 'is hungry for soil (and) is a waste of time and money.'⁴¹ Such testing gave Maiden and H V Jackson, the superintendent at Gosford, the opportunity to direct with

³⁹ RBGS, Register of letters received, October 1897- December 1898, SR NSW 19/17192.1897.3028,3044,3066.

⁴⁰ Joseph Maiden, "Forestry: Some Practical Notes on Forestry Suitable for New South Wales: Trees Other Than Conifers and Palms: Oaks," *New South Wales Agricultural Gazette* 19 (1908): 531.

⁴¹ *Ibid.*: 524.

authority, but not necessarily control, the look and function of street spaces across New South Wales.⁴²

It was the adaptability of some species that made them standard bearers for this trend. In other locations, trees had been successfully relocated to provide stock for street tree planting. It was the adaptability of the pin oak *Quercus palustis* in two different continents that made it a valuable resource for consideration in Australia. Maiden wrote of it:

Originally described in Germany from a cultivated specimen. It has been for over a century an inhabitant of the parks of Europe, where it often grows vigorously and attains a large size. Although less commonly planted into its native land, its symmetrical habit and the beauty of its summer and autumn foliage make it always a distinct and desirable ornamental tree, and no other oak is better suited to shade the highways and parks of the Northern States" (Sargeant). Meehan singles out this oak as particularly adapted for side-walk (pavement) planting in cities, since it seems to thrive under the adverse conditions usually found in such places.⁴³

Maiden showed how it has thrived both in a native habitat in North America and in a new location in Europe. He also demonstrates that the tree was brought into the city, into parks in Europe but also naturalised as a city tree in both parks and streets in America.

⁴² Maiden, "Forestry: Some Practical Notes on Forestry Suitable for New South Wales," 54.

⁴³ ———, "Forestry: Some Practical Notes on Forestry Suitable for New South Wales: Trees Other Than Conifers and Palms: Oaks," 531.

A Transnational Form for a Local Function

For trees to work in the spatial patterning of the street, it was a particular form that took precedence over factors such as indigeneity, or the deciduous nature of a tree. This meant that neither indigenous nor exotic trees were preferred, but instead Maiden matched the appropriate transnational stock with the intended geographical locations. The access to nursery stock enabled Maiden and the Sydney Botanic Gardens to grow the transnational stock of plants that moved into streets across New South Wales. So what was this form, this image? It relied on three interconnected aspects: the capacity for shade; the density of the canopy; and a uniform shape. The importance here lay in the capacity for movement. When the street tree trend was taken up in various places across the globe, it was not the plane tree of Paris that moved, but an expectation of functional aesthetic form. This is why different trees are found in different locations and why they are so familiar and recognisable in each place.

They provided shade, an ameliorative to the heat and humidity found in Australia. Street trees were predominantly referred to as shade trees by Maiden when he publicly discussed this matter.⁴⁴ This indicated a particular function in a hot climate, where settlers needed protection from the heat of the summer sun. Unlike Europe, where the deciduous tree was coveted for its capacity to allow winter sun to warm the chill of the streets, shade was a local requirement in Australia all the year around. In the colder parts of New South Wales, it was less problematic to include deciduous trees. In this way the cold climate trees did have a place and were grown in the nurseries of the Sydney Botanic Gardens.

⁴⁴ ———, "Some New South Wales Plants Worth Cultivating for Shade, Ornamental, and Other Purposes.", "Shade Trees, City Beautification," Commonwealth of Australia Parliamentary Debates, Senate and House of Representatives, Vol 75, 8 October -12 December, 1914.

At this time, there was much debate in Australia as to the effects of the hot climate on the morality and intellect of white men. Here race was inexorably bound up with the climate. In the cold regions of the world, so this theory goes, white men had developed sharper skills through response to a hostile cold climate. Key attributes, such as intellect, morality and initiative eventually became the heritable qualities of the civilised. In the tropical climates, where food was in abundance and life could be lived at a different sort of pace, the opposite was true. The heritable qualities found in relation to hot climates were intellectual stagnancy and moral decline.⁴⁵ Coloured people in Australia, whether indigenous, Indian, Pacific Islanders, Chinese or Asiatic were categorised according to this theory. Where the climate itself could not be changed, white settlers adapted architecture and landscaping to ease the steamy humidity, or the dry heat that was found in New South Wales. Shady trees created the conditions in which the bustling activities of town could be conducted in optimum comfort, thus protecting the civilised.

They were also thought of as a means of counteracting the unsavoury air-borne qualities of the street environs. Industry pumped copious amounts of smog and smoke into the air in cities. Trees were thought to provide a way of cleansing this smoggy atmosphere. Trees, referred to as the lungs of the city, could breathe fresh air into urban environs. In country towns, rather than industrial smog, it was the dust from unsealed roads that contributed to unhealthy air. By planting trees alongside the streets, the soil was stabilised and streets were thought less likely to add to the dust problems in the dryer parts of the New South Wales.⁴⁶ While these

⁴⁵ Walker, "Climate, Civilization and Character in Australia, 1880-1940."

⁴⁶ "Grafton's Railway Problem," 13.

elements were very important justifications for planting trees, it was the shape or outline that needed to be cultivated in the street tree form.

A good street tree carried the same shape as those in Paris, Washington, Bangalore and Melbourne. A long trunk was preferred such that young boys were discouraged from climbing. A long trunk also allowed for city amenities, such as street lighting or veranda roofs. Trees were trained to attain this length in their early shoots and those that naturally attained such trunks became popular additions to nursery stock. What then became the lowest branches spread dramatically from the trunk and the head of the tree formed a neat ball. Pines, widely used in ocean promenades in Australia, are a variation on this theme. They also have straight, single trunks, wide spread on the first branches, but instead of creating a balled head, they create a shape more akin to a cylindrical pyramid. Unless trained, pines shoot branches at ground level, so need the care of gardeners to conform to this type of shape. The optimum tree would be densely covered. Horticulturalists call this shape umbrageous, which indicates the capacity of a tree to cast shade and provide coolness.

Figs and camphour laurels, both highly regarded by Maiden, were trees that could be readily imposed into this ideal outline. Most indigenous trees don't conform: neither the spindly canopy of the eucalypt nor the dense shrub of most wattles was favoured for this use. One of the trees regularly distributed from the state nurseries was the Brazilian peppertree, *Schinus molle*.⁴⁷ For example, some 2,650 trees were distributed from Gosford in 1902.⁴⁸ Whilst

⁴⁷ Many of the scientific names used in this paper have been altered by subsequent taxonomic work. I have used the names as they appear in the documents of the time, and acknowledge that botanists will have disregarded them.

⁴⁸ Report for the State Nursery Gosford, Letterbook of the Gosford State Nursery, 1901-1902, SR NSW 3/2283,198.

botanising at Hill Top near Sydney in 1896, Maiden notes that *Acacia elata* was described by his friend as the 'pepper-tree wattle (after *Schinus molle*), which gives an excellent idea of its foliage.'⁴⁹ This was not a scientific classification, but an attempt to subsume transnational difference into a template that essentialised form and function over other differences. Maiden readily transposed the Brazilian peppertree and the pepper-tree wattle, not because they were botanically or geographically related, but because their form shape, size and denseness of foliage were *aesthetically similar*.

In Maiden's lobbying for the planting of street trees in the *Sydney Morning Herald*, it is this imagined, aesthetically ideal form that he advocated. Uniformity in their spacing on the street absorbs his attention. Some trees need to be placed ten feet apart, others twenty or twenty-five, depending upon the species' growth pattern. He even advocated the spacing of 100 feet for the large Moreton Bay fig *Ficus macrrophylla*.⁵⁰ This ensured that shade was evenly dispersed along the street. Each species that was suggested was modified so that the eventual growth patterns would produce a recognisable urban aesthetic. Figs planted too close together crowded the street and those planted too far apart lacked the beauty of interlacing branches, offering instead a broken line. The planting of different species along a single avenue was consistently condemned by Maiden and other internationally placed writers. Such difference spoiled the repetitive patterning of the ideal. Although the introduction of trees into urban landscapes heralds a natural look for the city, in fact this image was a cultivated one and was never attained without consistent human intervention.

⁴⁹ Maiden, "Concerning Hill Top," 266.

⁵⁰ Joseph Maiden, "Our Parks: The Philosophy of Pruning and Eradicating Trees," *Sydney Morning Herald*, 20 January 1906.

In the early stages of a tree's development, gardeners employed for parks guarded the trees with an array of devices. Iron palings, temporary timber fencing and occasionally nets created a technological protection for young trees. Regular watering and monitoring of growth ensured that gardeners maintained an interaction with the trees over their lifetime. The most important job of the gardener was pruning. A tree had to be guided into this ideal image. Lower branches were constantly removed, a single leader was forced to a height of ten to twelve feet, this being preferred over a trunk that split and created an uneven structure for city streets.⁵¹ Pruning also helped the trees to function in relation to other street technologies. They had to create a ceiling high enough for carriages and other transport to move beneath. In an ideal arrangement, the street tree worked in tandem with the artificial lighting of the street. Pruning a large street tree was no small job and could take a full day for a group of gardeners. In 1906, Sydney Botanic Gardens staff removed 'six dray loads'⁵² of branches from a single tree in order to maintain a 're-formed, symmetrical and well-balanced head.'⁵³ As such the symmetry of the tree took precedence in forming an ideal shape. In his publications, Maiden juxtaposed discussion of the desirability of particular species for street or ornamental planting with photographs that reinforced the symmetrical, umbrageous, uniform image of the transnational street tree. In his publications about forestry in Australia, he used photographic shots to accompany the descriptions of *Ficus benjamina*, *Ficus macrophylla*, *Populus alba*, *Populus nigra*, *Quercus virginiana* and *Ulmus campestris*. All of these species, exotic and indigenous, were popular inclusions in plant distributions from the Sydney Botanic Gardens. This shape was preferred across the globe and could be found as readily in colonial Asia as it was in Paris, Washington or London.

⁵¹ ———, "Forestry: Some Practical Notes on Forestry Suitable for New South Wales," *New South Wales Agricultural Gazette* 14 (1904): 982.

⁵² A dray is a colloquial term referring to a low, heavy cart without sides, used for haulage.

⁵³ Maiden, "Report on Botanic Gardens and Domains for the Year 1905," 26.

This meant that whether a tree was indigenous to a region was irrelevant in decision making about the inclusion of street trees. In London and Paris the plane trees, *Platanus orientalis* was one of the species found on the streets. According to American landscape architect, Andrew Downing, this tree, indigenous to Persia, was naturalised in both the European and American continents by the nineteenth century.⁵⁴ On the other hand, in Japan, the indigenous conifer *Pinus massoniana* was used along the highways of the *Wumi Matsu*, with the traveller Andrew Murray suggesting that they 'serve throughout all the Empire'⁵⁵ for marks along the road.⁵⁶ In India, on the other hand, the indigenous fig *Ficus infectoria* was found with imported South American jacarandas *Jacaranda mimosifolia* in New Delhi.⁵⁷ 1000 packets of tree seeds were distributed from Calcutta Botanic Garden for the 'aboricultural adornment' of New Delhi in 1915.⁵⁸ By the 1920s, Moreton Bay figs from Queensland, oaks from Europe and Britain, pines from America, figs from India, peppertrees and jacarandas from Brazil, and camphour laurels from China all took root in places across New South Wales such as Strathfield, Grafton, Bungendoore, and Quirindi. At a practical level, there was no importance placed upon the distinction of native and exotic. Transnational movement allowed for a range of trees to be adapted to this ideal.

⁵⁴ Andrew J Downing, *A Treatise on the Theory and Practice of Landscape Gardening*, 8th ed. (New York: Orange Judd & Co, 1859), 135.

⁵⁵ To clarify, Andrew Murray is referring to the Japanese Empire not the British Empire in this passage.

⁵⁶ Andrew Murray, *The Pines and Firs of Japan* (London: Bradbury and Evans, 1863), 31.

⁵⁷ M S Randhawa, *Beautifying Cities of India* (New Delhi: Indian Council of Agricultural Research, 1961), 12-17.

⁵⁸ A.T. Gage, Annual Reports of the Royal Botanic Garden and of the Gardens in Calcutta and the Lloyd Botanic Garden, Darjeeling, for 1915-1916, 1.

Transnational Nation-builders

Street trees were an addition to street life and have the effect of overlaying the cadastral grid used in the earlier surveys and formation of towns. The trees repeat and deepen the visual line of the street and thicken the layers of settlement. Trees softened the harsh lines of the built environment. They traced the lines that were already there in the grid pattern, naturalising settlement through an appropriation and remaking of nature. This did not mean that towns were meant to blend into their indigenous surroundings: on the contrary, this was very much a constructed vision – the trees were meant to blend with the built environment. Maiden acknowledged that local indigenous trees would aptly respond to the local climate and geography, but it was the imagined aesthetic of a tree-lined streetscape that took precedence, rather than the tree's status as exotic or native.

The planting of street trees was almost always done after the townships had been established and indicate permanence to the settlement of that particular place. Civic pride was invoked as a good reason to add trees into streetscapes after building the physical infrastructure. Trees that grew to great size, such as indigenous figs and exotic oaks, could outlive the settlers that planted them. Oaks were often discussed in terms of the permanence they brought to urban landscapes because of their longevity: they indicated that settlers were here to stay.⁵⁹ The wattle *Acacia pycnantha* was rejected for this type of cultural work during Maiden's tenure, even as it was being taken up as a national symbol between 1890 and 1914. Wattles, Maiden argued, were 'unsuited to street planting, as they mature too quickly.'⁶⁰ With a street life that he estimated at five years, this meant unnecessary work for municipal authorities. Longevity

⁵⁹ Joseph Maiden, "Forestry: Some Practical Notes on Forestry Suitable for New South Wales," *New South Wales Agricultural Gazette* 19 (1908): 523-26, "Ornamental and Useful Tree-Planting No. 2," *Journal of Horticulture and Cottage Gardener* (1876): 170-72.

⁶⁰ Maiden, "Tree Planting for Shade and Ornament in New South Wales with Especial Reference to Municipal Requirements," 301.

was measured against the impermanence of migratory and transient built environments, such as gold mining shanty towns or indigenous camp sites. In the formulations of urban planning such transience could be applied just as easily as it could be to the mobile indigenous people of Australia as to the underclasses of European cities. Tress added to the sense of civic stability associated with enduring settlement.

The European Valonia oak was one example of a tree that could readily be used as it represented both an economic and aesthetic contribution to settlement. Successful naturalisation of citizens was marked by a successful uptake of economic activity; the Valonia represented this dual capacity. Maiden said 'It is a tree that should be very widely tested in this Colony, for it is an ornamental shade tree, as well as one of the principal tan yielders of the world.'⁶¹ In 1899, Maiden sent the oak to twenty-nine locations throughout the State.⁶² Trees naturalised nation-making, they were brought-in as nation-builders. They could be demarcated as exotic or indigenous, *and* transnational. Difference was just fine, so long as it worked toward a practice of naturalising settlement, and not against it.⁶³

The introduction of trees into the street constituted a spatio-cultural reinforcement of the politico-cultural ideal. Maiden, ever the triumphant nationalist, argued at one Royal Commission that 'solving municipal problems becomes a possible national function.'⁶⁴ Just like the trees that were fashioned into a particular shape, Australian-ness was about

⁶¹ Joseph Maiden, "The Valonia Oak," *Agricultural Gazette of New South Wales* 10, no. 7 (1899): 617.

⁶² *Ibid.*: 611-17. Valonia Oaks went to the following locations: Sydney, Chatswood, Wharoonga, Picton, Moss Vale, Barbers Creek, Goulburn, Wagga Wagga, Dapto, Ulladulla, Bungendoore, Cooma, Prospect, Mt Druitt, St Marys, Upper Kurrajong, Lawson, Mount Victoria, Mount Wilson, Jenolan Caves, Bathurst, Molong, Stuart Town, Coolabah, Bourke, Quirindi, Walcha, Armidale and Tenterfield

⁶³ Ghassan Hage: 'As Michael Billig argues in *Banal Nationalism*, many of our words embody a national deixis which ensures that images of the nation are always 'near the surface of contemporary life.' Ghassan Hage, *White Nation: Fantasies of White Supremacy in a Multicultural Society* (Sydney: Pluto Press, 1998), 38.

⁶⁴ Hughes, "Royal Commission for the Improvement of the City of Sydney and Its Suburbs," 182.

conforming to a national model. One could be from elsewhere, but nation-building encouraged a sense of belonging that made them all Australians. This was a matter of conforming to an idealised image of Australian-ness. The White Australia policy of immigration introduced in 1901 constructed this national identity along the lines of whiteness. Australians hailed from England, Ireland, Scotland and Wales, but could also claim nationality if they were from America or South Africa. Migrant groups also came from Scandinavian and German speaking countries and became Australians. As shown by sociologist Ghassan Hage, this whiteness was never a stable or unified category, but depended largely on naturalising specific groups of people from elsewhere to an Australian ideal.⁶⁵

These same ideas are reflected in the naturalising of trees from a myriad of origins for a uniform, linear, aesthetically recognisable street form. The elms planted in Kendall Avenue, Bathurst⁶⁶ could be identified as North American, but they became Australian in their relocation. These trees became a source of civic pride. When a plant was categorised as indigenous or exotic, they were marked by their location in relation to original habitats. Plants, however, can also be naturalised and it was this process that took precedence over indigeneity. As such, trees that adapted to a locale over an extended period of time, were acknowledged as a part of that habitat. This process of erasing difference in an urban aesthetic occurred at the same time that difference was being suppressed in other arenas as part of white Australian nationalism.

⁶⁵ Hage, *White Nation: Fantasies of White Supremacy in a Multicultural Society*, 15-26.

⁶⁶ Photo Investigator, SR NSW, 12.932_a012_a012X2449000056.jpg; 12932_a012_a012X2449000059.jpg; 12932_a012_a012X2449000060.jpg.

In the national forum, only certain groups could make a claim to the national ideal. Indigenous people and certain migrant groups, such as the Pacific Islanders and the Chinese, could not claim belonging in a nation that was federated under the standard of White Australia. Those that did not belong, could be uprooted and cast out, or left at the margins. This was also reflected in the selection of species acceptable for street planting. In Tocumwal, imported figs conforming to the ideal were used as street trees, while on the outskirts of town the unruly local gums were left as fringe dwellers.⁶⁷ This didn't mean that indigenous trees had no place in these formations; on the contrary, Moreton Bay figs *Ficus macrophylla* and Port Jackson figs *Ficus rubiginosa* were sent to many coastal towns. While sugar gums *Eucalyptus cladocalyx* were sent to places like Carrathool Shire Council in the Riverina district of south-western New South Wales as they were thought to be drought resistant.⁶⁸ So if the indigenous *could* conform to the ideal then all the better.

Detouring to Grafton

Most of the themes identified thus far are present in the history of street trees in Grafton. It is important to remember that this is just an example; many towns across the state had street trees and many places received consignments from the Sydney Botanic Gardens. Maiden's work reached out all over New South Wales, so in some ways looking at a particular town does not do justice to the extent of the campaigning, and his capacity to move transnational trees. However, it does demonstrate the manner in which these processes and contexts emerged within a particular community and environment.

⁶⁷ At Work and Play, Picman, State Library of New South Wales, 05988.

⁶⁸ RBGS, Correspondence Files (Herbarium) 1907-1948, SR NSW 8/262.02115.

When categorising the state into zones, Joseph Maiden correctly identified the Clarence River area as geographically distinct. He called this area 'the Northern Rivers, a distinctly sub-tropical belt, forming the north-eastern portion of the State.'⁶⁹ Although no map accompanied his writings about the zones of New South Wales, it is safe to presume that the area that he was discussing is north from Port Macquarie to the Queensland border at the Tweed River, bounded to the west by the Great Dividing Range. In 1983, Archaeologist Denis Byrne identified four land use zones in this geographic region: coast and coastal wetlands; floodplains; riverine; and upland zones.⁷⁰ This was a subtropical rainforest region, with substantial river systems lacing across the plains below the Great Dividing Range down to the Pacific Ocean.⁷¹ Gumbainggir country was roughly triangular in shape, taking as its points Nambucca Heads in the South, Yamba in the North and Glenn Innes to the West. The northern boundary of this country was the river now known as the Maclean. Grafton is located on the Clarence River upstream from Yamba and receives an annual rainfall of forty inches. The area around Grafton was a mixture of riverine and floodplain, but either way was distinctive for the brush forests that lined the banks of the Clarence in the vicinity of the settlement.

The red cedar *Toona australis* was one of the trees growing abundantly in this region. Colloquially referred to as cedar brush, this was a region that supported pockets of semi-tropical rainforests abundant in a range of species in addition to the red cedar. One chronicler described the pre-settlement environs of Grafton as

⁶⁹ Joseph Maiden, "Tree Planting for Shade and Ornament in New South Wales, with Especial Reference to Municipal Requirements," in *Forest Flora of New South Wales* (Sydney: 1916), 300.

⁷⁰ Denis Byrne, New South Wales National Parks and Wildlife Service., and Ulmarra (N.S.W. : Shire). Council., *Aboriginal Sites in Ulmarra Shire: A Background for Site Management: Report to National Parks and Wildlife Service (NSW) for Ulmarra Shire Council*, unpublished report, Sydney: National Parks and Wildlife Service, 1985.

⁷¹ *Integrated Ecology of the Clarence River Valley*, 2 vols. Royal Military College (Duntroon A C T), University of New South Wales, 1977.

a very dense cedar brush which embraced all the river frontage excepting a few cleared spots where the trees had been destroyed. This brush extended an average of a quarter of a mile deep back from the river.⁷²

These forests were an abundant food source for indigenous people, supplying yams, cunjevoi, fern root, tamarind, native pineapple, wild grapes, Moreton Bay chestnuts, lily roots, bangalow palm hearts and cabbage tree palm hearts.⁷³ For indigenous groups travelling between the ocean and the estuaries, these forests and the rivers that flowed through them were both sustenance and survival.⁷⁴

Cedar-getters were the first substantial contact groups to begin a process that changed forests into urbanity. Red cedar was used extensively in furniture making and the building trade, providing a quality product for both domestic and export markets.⁷⁵ Local historians mark the moment of arrival of timber pursuits as 1837. The availability of timber was one factor in the organic siting of the township, but the other was the possibilities for wharfage on the river. A natural u-shaped bend in the river, in water deep enough to carry the small sailing vessels from the ocean, provided a steady means of communication with Sydney. Logs could be floated down the river to this point and held until shipping transport was arranged. A sketch map drawn by Mr Butcher of the Schooner *Eliza* in 1838 points to this reach of the river as the furthest navigable point for large craft.⁷⁶ This map also indicated that the bend was already a relatively clear flat on its northern banks, buttressed by brush. Whether this was a

⁷² Grafton Municipal Council, *Grafton and District, Its History, Trade and Industries 1859-1909*, Sydney, Local Government Publishing Coy., 1909, 31.

⁷³ Byrne, New South Wales National Parks and Wildlife Service., and Ulmarra (N.S.W. : Shire). Council., *Aboriginal Sites in Ulmarra Shire*, 38.

⁷⁴ Nigel Sabine, *An Ethnohistory of the Clarence Valley*, B A (Hons) thesis , University of New England, 1970., Tables 2, 3, 4.

⁷⁵ John Vader, *Red Cedar: The Tree of Australia's History* (Frenchs Forest, N.S.W.: Reed, 1987).

⁷⁶ Map reproduced in Sabine, *An Ethnohistory of the Clarence Valley*.

natural flat, or a cleared spot for an indigenous camp site when foraging in the brush was a matter for conjecture. Regardless, Misters Phillips and Cole created a supply depot on this clearing between the river bank and the brush. This spot was formerly ratified by the Deputy Surveyor General Perry when he visited the area in 1839.⁷⁷

Rose Selwyn's map, reputedly drawn in 1858, shows all the key services of an emerging township hugging each side of the bend of the river.⁷⁸ The banks, school, church, hotel, ferry landing and wharfage take up the river frontage with homes scattered behind the main line of the settlement. Selwyn's other drawings of views of the town clearly demonstrate the streets empty of trees. Trees provided a backdrop to the ever present brush bordering the town.⁷⁹ In 1859, sixty-nine householders from the area petitioned the New South Wales Government, and the Grafton Shire Council was formed, holding its first meeting in September of that year.⁸⁰

A citizen petition was presented to councillors in October, just one short month after the first meeting. They were concerned about the state of the streets, and proclaimed: 'We the undersigned, now members of the municipality, respectfully beg to memorise the committee on the necessity of cleaning and opening the streets of Grafton for the better convenience of trade and traffic.'⁸¹ Local histories argue that a survey of Grafton was drawn up by John Charles Darke in 1853 or 1854. Darke assisted both Robert Russell and Robert Hoddle in the

⁷⁷ Queensland Soda Fountain Journal Publishing, *Back to Grafton Week* (Brisbane: Queensland Soda Fountain Journal Publishing, 1932), 8-9.

⁷⁸ Rose Selwyn, Map of Grafton c.1858, ML Small Pictures Collection.

⁷⁹ Rose Selwyn, Pencil drawings of Grafton c.1858, ML Small Pictures Collection.

⁸⁰ NSW Government Gazette 10 March, 1859, 593.

⁸¹ Grafton Municipal Council, *Grafton and District, Its History, Trade and Industries 1859-1909*, Sydney, Local Government Publishing Coy., 1909, 35.

laying out of Melbourne. This was unlikely given that Darke died in South Australia in 1844. The surveyor who imposed the cadastre on this reach of the Clarence River was William Widge Darke, an assistant surveyor with the New South Wales Survey Office. However, there was an association that links Grafton to Melbourne's splendour and marvel: the 99 foot width of the streets. In both places the wide street became a key feature in the provision of spatial amenity and quality. The width of the streets facilitated the introduction of trees into both places.

Whereas in European cities, in particular Paris, the introduction of streets and street trees had been part of an urban movement to bring rational and hygienic order to the city, in Grafton a process of renewal was also articulated. Instead of the threat of working classes and the disease-ridden multifunctional street, on the Clarence River it was the brush itself that was threatening. In discussing this petition, the council records and celebrates the 'men whose strenuous efforts to remove the dark realities of the old days have made possible the golden opportunities of to-day.'⁸² The darkness of the wild natural environment was juxtaposed with the golden opportunities represented by a grid layout of neat streets that tamed and harnessed the land for settlement.⁸³

As closer settlement became a reality in the area, the township grew. Grazing, which had followed the cedar harvesting, turned to dairying and agricultural pursuits. As the population and wealth of the area grew, so too did the town. Their economic, social and cultural life connected symbiotically. In the early years of settlement, four languages dominated the aural

⁸² Grafton Municipal Council, *Grafton and District, Its History, Trade and Industries 1859-1909*, Sydney, Local Government Publishing Coy., 1909, 35.

⁸³ See Giblett, *Postmodern Wetlands: Culture, History, Ecology*. For an interesting discussion of the negative language used to understand and manage wetlands during this time.

environment, English, German, Gaelic and Gumbainggir.⁸⁴ Each community contributed to the vibrant rural township that became Grafton. Photographs reproduced in the council history in 1909 show the thriving commercial centre of the 1870s, though its dusty streets were denuded and bare.

As the city expanded, new streets of the survey were cleared, rolled and prepared for traffic. As a general rule, when brush was removed this entailed clearing from the ground level and above, creating a grid into which schools, houses, and business were built. Some trees replicate the canopy size under the ground level in root systems that seek out nutrients and water as well as anchor them in place. Other rainforest species are shallow rooting.⁸⁵ While major stumps may have been grubbed out, burned down, or the core dug out, there was a residual mass of lateral or deep tap root stock that remained underground.⁸⁶ As that material died it was converted, thus enriching the soil, though it can take many years for root stock to completely break down. This would have created a series of soft tunnels in the soil, into which new root systems thrived. In addition, unlike tropical rainforests in which the soils are very nutrient poor, the layers of alluvium deposited through the flood cycles of the river, enriched the soil quality of this area. The reality that the town sat next to the river, with its responsive water table, also influenced the quality of the soil for the growth of trees.⁸⁷ These tables rise and fall in accordance with the rainfalls in the broader catchment areas of the

⁸⁴ Grafton Municipal Council, *Grafton and District, Its History, Trade and Industries 1859-1909*, Sydney, Local Government Publishing Coy., 1909, 17.

⁸⁵ Richard W Harris, James R Clark, and Nelda P Matheny, *Arboriculture: Intergrated Management of Landscape Trees, Shrubs and Vines* (Upper Saddle River, New Jersey: Prentice-Hall, 1999), 32-38, Richard W Harris, *Arboriculture: Care of Trees, Shrubsm and Vines in the Landscape* (Englewood Cliffs, New Jersey: Prentice-Hall, 1983), 42-47, A Bernatzky, *Tree Ecololgy and Preservation* (Amsterdam: Elsevier Scientific Publishing company, 1978), 25-32.

⁸⁶ Anthony Bradshaw, Ben Hunt, and Tim Walmsley, *Trees in the Urban Landscape: Principles and Practice* (London: E & FN Spon, 1995).

⁸⁷ A. J. McComb and P. S. Lake, *Australian Wetlands* (North Ryde, N.S.W.: Angus & Robertson, 1990), 153-62.

Clarence Valley. Combined, these ecological factors were a boon for the introduction of street trees from the 1870s.

Greening Grafton commenced in the 1870s, at least a decade after the council was formed and the brush removal began. This was ample time for the root stock to rot down. As the streets were trenched and prepared for trees, gardeners would have found almost perfect soil conditions. There has always been local conjecture about who planted the first trees and where they were planted. 1869, 1870, and 1874 are all dates given for the first plantings.⁸⁸ Some say figs were planted outside the court house⁸⁹ and others say the school of arts building.⁹⁰ Some say that the Mayor was the first to plant and others attribute that honour to local businessmen, who were supposedly asked to donate a tree each for street planting.⁹¹ Regardless, it was clear that this was a project with majority community support. According to local environmentalist Barbara Fahey, the oldest trees are those in Victoria Street, which also houses the oldest municipal buildings, the post office, the court house and the police barracks.⁹² What was distinctive about this phase of the street planting was the variety of trees planted.

⁸⁸ H C T Maxted, "Planting Days Revived," *Daily Examiner*, 23 December 1929, Glenn Dockrey, *Street Trees of Grafton* (Grafton: Clarence River Tourism, 2007). Richard Craigie Law, 'In the Seventies, clipping from the *Daily Examiner*' in Notebooks and Newspaper Clippings Books, vol.7, 32-33.

⁸⁹ Queensland Soda Fountain Journal Publishing, *Back to Grafton Week*, 21.

⁹⁰ Richard Craigie Law, 'Copied manuscript of Mrs Volckers' in Notebooks and Newspaper Clippings Books, vol.13, 102.

⁹¹ J G Lockley, 'Who planted the first trees in our Riverside City?' unidentified Newspaper clipping, Volckers family file, CRHS.

⁹² Guided tour conducted for me by long time resident, tree committee member and environmental activist Barbara Fahey 7 August 2008.

In 1874, the Sydney Botanic Gardens sent the following plants to the Public School and the Police Department, both early public institutions to request plants.⁹³

Table 4. Trees sent to Grafton from the Sydney Botanic Gardens 1874

Grafton Sup. Public School ⁹⁴	Police Department, Grafton
3 <i>Ficus Macrophylla</i>	1 Pomegranate
1 <i>Pinus pinaster</i>	1 <i>Calalpa Kempferii</i>
2 <i>Araucaria excelsa</i>	1 <i>Faxunus species</i>
1 <i>Araucaria Bidwelli</i>	1 <i>Cytharexylon</i>
1 <i>Pinus muricata</i>	1 <i>Ligustrum pubescens</i>
1 <i>pinus excelsa</i>	1 <i>Abutilon venosum</i>
1 <i>Cupressus Funebris</i>	1 <i>Hatrolhammus</i>
1 <i>Cupressus torulosa</i>	2 Plane
1 <i>Cupressus Cashmeriana</i>	1 <i>Deutzia</i>
1 <i>Retinospora pisifera</i>	2 Elms
2 <i>Corynocarpus laviyatus</i>	2 <i>Ligustrum lucidum</i>
2 <i>Laurus Camphora</i>	2 Oak
2 <i>Eugenia Smithii</i>	2 <i>Spirea</i>
2 <i>Ligustrum lucidum</i>	3 <i>Jinglans nigra</i>
12 flowering Shrubs	2 Moreton Bay Fig
	2 <i>Pinus insignis</i>
	1 <i>Corynocarpus</i>
	1 <i>Treplama conferta</i>
	2 <i>Pinus halpensis</i>
	2 <i>Araucaria</i>

⁹³ The registers of plants sent away list all the species and quantities of plants sent in the early volumes. As time went on, Maiden's predecessor Moore listed the plants and quantities went they were being sent to botanical institutions, but reduced the entries to quantities of trees, shrubs and misc. Maiden was to further reduce the entries during his tenure and ceased specific lists for botanical institutions as well. Maiden was much more interested in being able to report volume than particularity.

⁹⁴ Register of Plants Sent Away, RBGS, 1870-1913, SR NSW 19/17199, 82,138.

Some of these trees were the best examples of street trees used in other places across the world. Remnant plantings of camphour laurel, oaks, elms, plane trees and pines still grace the oldest streets of the town. These early trees took off due to the local ecological situation combined with a community that cared about the aesthetic of town.

The trees grew quickly; photographic evidence from the 1880s demonstrated well established and healthy trees along the main thoroughfares of the town.⁹⁵ Between 1874 and 1885, 1500 trees were planted at a cost of £1,680. This cost would have included labour, tools, material for trenching and tree guards, and possibly the purchase of young trees. By this time, the town had a population of 4000, enough to apply to the New South Wales government for an additional ward for the council.⁹⁶ The outlay of £1,680 suggests that the council was able to raise considerable revenue which could be returned to the community in the shape of street trees. In a letter to the editor of the Clarence and Richmond Examiner in 1874, local nursery man Henry Volckers recommended a mixture of trees for shade in the Clarence climate. These included three indigenous species: 'the Turpentine, the Moreton Bay Chestnut and the Moreton Bay fig' and four exotic: 'the White Mulberry, the Weeping Willow, the Camphour Tree and the Plane Tree.'⁹⁷

In 1910, journalist Leslie Curnow waxed lyrical about the 'trees that line its wonderful streets' of Grafton. He wrote 'many inland towns have fine trees, Bathurst, for instance, but

⁹⁵Grafton, Small Pictures Collections, ML; Photographic collection, CRHS.

⁹⁶ Municipality of Grafton(1859-1939) , Organisational Details, State Records New South Wales: <http://investigator.records.nsw.gov.au/Entity.aspx?Path=\Organisation\68>, viewed 29 July 2008.

⁹⁷ H A Volckers, 'Trees and Shrubs suitable for the Clarence Climate' *Clarence and Richmond Examiner*, 21 April 1874.

Grafton ought to be world-famous in this respect.⁹⁸ The trees that Curnow saw in Grafton were the South American jacaranda, *Jacaranda mimosifolia*, the South African cape chestnut *Calodendrum capense*, the Australian silky oak, *Grevillea robusta*, the Illawarra flame tree *Brachychiton acerifolius*, the bunya pine *Araucaria Bidwelli*, the bean tree *Castanospermum australe* and the American plane tree, *Platanus sp.* Additionally photographic evidence shows the use of the South Asian figs *Ficus sp.*, in Grafton's earlier street plantings. While Maiden favoured trees that provided shade, the original decisions made by local council officials about street plantings in Grafton preferred flowering over foliage trees.

Of these, the jacarandas, the cape chesnuts, silky oaks and bean trees all flower in the early summer, when rains are expected in each of their native habitats. This recently caused television personality and gardener Don Burke to group them together under the moniker of monsoonal deciduous trees.⁹⁹ Shedding leaves in winter and flowering in spring, allows seeds to fall in times of high rainfall, thereby ensuring the best chance of healthy germination and early growth. For Grafton, this meant that colour was a feature of the urban aesthetic imagined for the town.

In terms of the transnational form, each of these trees had the potential to conform to the neat umbrageous shape of street trees found all over the world. The three interconnected aspects – the capacity for shade; the density of the canopy and a uniform shape – were all possible in each of these species. Trees such as jacarandas, silky oaks and figs all required the special

⁹⁸ Leslie Curnow 'The Northern Rivers – The City of Grafton' 27 October 1910, in ML Newspaper Cuttings FMV/7717 Vol 20: 44-5.

⁹⁹ Jacarandas and Other Monsoonal Deciduous Trees, Burke's Backyard Fact Sheets, http://www.burkesbackyard.com.au/1999/archives/25/in_the_garden/trees_and_palms/jacarandas_and_other_monsoonal_deciduous_trees, viewed 30 July 2008.

attention of maintenance crews to attain the sort of density that was usually required. Some of the trees shaded the streets in the hottest months of the year, while the deciduous nature of other trees meant that some of the key streets of Grafton were warmed in winter.

The Australian trees used by Grafton, were all trees that would have grown in the brush and subtropical rainforest stands of the pre-settlement Clarence Valley. Only one generation of local people separate the desire to clear the brush from the introduction of selected species back into the ground at Grafton. Signalling recognition of the irony of this move, one objector to the project said 'We cleared the streets and scrub and you plant them again!'¹⁰⁰ Here the trees of a natural habitat, once connoting darkness, were transformed into civilised trees, the bearers of civic pride. Progress was delivered in this form and as the trees aged, the beauty of the town was promoted through the trees.¹⁰¹

Over the course of the decades between the first wave of street tree planting in the 1870s and 1880s and the second phase in the 1910s, the Sydney Botanic Gardens were to contribute to the public greening of Grafton. The Campbelltown nursery supplied trees for consignments to be sent to the Convent of Mercy, the local Lands Office, the Public School, Roman Catholic Church, Church of England Cathedral, Court House, Aborigines Board, the Experimental Farm, Benevolent Society, Goal, Police Station, a park in South Grafton and the hospital.¹⁰² The volume of seedlings sent to these public bodies suggests that perhaps some of these trees were planted into the streets as well as the grounds of places. Local Newspaperman W A Zuill reported that twenty-five Norfolk Island Pines and Bunya Bunyas were planted in

¹⁰⁰ Richard Craigie Law, Notebooks and Newspaper Clippings Books, Vol 13, 102.

¹⁰¹ Grafton The City of Trees, Promotional pamphlet, CRHS, item C1349.

¹⁰² Register of Plants Sent Away, RBGS, 1870-1913, SR NSW 19/17199, 19/17204-17207.

Victoria Street by prison labour in 1877.¹⁰³ However it was apparent that the Sydney Botanic Gardens were not the only source of supply for these early street trees.

After this period of prosperity in Grafton came a series of environmental events that affected the settlement economy. A drought in 1886 was followed by a series of floods between 1887 and 1893.¹⁰⁴ By that time, a broad scale depression had hit the larger national economy, impacting on this area through the downturn in export commodity prices. In a city whose civic pride was already bound with its beautiful trees this aspect of municipal governance would have, in all likelihood, needed a reassessment. The council, already nurturing a street environment that was tree-lined, received the free-of-charge stock such that they could continue the ongoing project of greening the city. Street trees, although established in Grafton, constantly needed supplementing due to the continued expansion of the urban areas of the town. Over the 1880s the Sydney Botanic Gardens sent 480 trees to the Municipal Council for use in streets and one box of Moreton Bay figs to the Police Department.¹⁰⁵ Again in 1895 the Sydney Botanic Gardens supplemented local stock with 200 trees for Grafton streets.¹⁰⁶ By 1900, locals claimed that 2000 trees grew on Grafton streets, the Sydney Botanic Gardens contribution representing one quarter of the seedlings destined for the town.

These trees were no longer seen as indigenous or exotic, but as Australian. Their national origins were subsumed by the task of nation-building. Curnow, though listing the different

¹⁰³ W A Zuill, "In 1877," *Daily Examiner* 1931.

¹⁰⁴ "Clarence River Floods," *Daily Examiner*, 9 September 1935. 1876 July 8; 1887 Jan 26; 1889, July 10; 1890, Jan 10, Feb 4, March 12; 1892, April 13; 1893. Feb 12, Feb 1.9, June 12.

¹⁰⁵ Register of Plants Sent Away, RBGS, 1870-1913, SR NSW 19/17206. 40, 183, 194, 209, 274.

¹⁰⁶ Register of Plants Sent Away, RBGS 1892-1898, SR NSW 19/17207. 128.

types of trees that he encountered, didn't see them trees for their difference, rather, he saw them for role they played in making Grafton a special Australian city. Such a city took pride of place amongst the other cities in the world famous for this recognisable aesthetic form. W.A.B. Greaves the ex Commissioner of the Crown Lands and District Surveyor of Grafton wrote in 1918: 'These glorious avenues, with their picturesque effects and their variety from street to street, should develop in the same category of Paris, Nice, Naples and Genoa.'¹⁰⁷ In writing home to his nephew Augustus, H J Holt compared the aesthetic effect to the Unter den Linden, the famous avenue of lindens in Berlin, Germany.¹⁰⁸

When Joseph Maiden took up his position as Director of the Sydney Botanic Gardens, Grafton was an exemplar of the impact that trees could have in civilising rural centres. Hence, while the research that Maiden generated in the Sydney Botanic Gardens library was one source of inspiration for campaigning for the wider use of trees, places like Grafton proved that this was valuable and workable in an Australian context. Maiden wasn't initiating a new campaign in Grafton, but was simply building into the structures that were available to him in his new job.

In 1904 and 1905, Maiden and his botanical collector visited the Northern Rivers region, collecting material for use in the work of the Sydney Botanic Gardens.¹⁰⁹ Such a visit gave Maiden the opportunity to contact local councils and other individuals and bodies who received plants from the Sydney Botanic Gardens. Grafton's fame regarding the street trees

¹⁰⁷ WAB Greaves, Letter to the Editor: Grafton's Trees, Newspaper Clipping, File B387, CRHS.

¹⁰⁸ Letter from H.J Holt to Augustus Holt, England, reprintd in CRHS Newsletter no.12, 11.

¹⁰⁹ Maiden, "Report on Botanic Gardens and Domains for the Year 1903," 6, Maiden, "Report on Botanic Gardens and Domains for the Year 1905," 9.

would have attracted Maiden and Boorman to the city of trees.¹¹⁰ One of the people who Maiden developed a corresponding relationship with was the nurseryman Henry Volckers. In 1906, Maiden and Volcker's exchanged both seeds and living plants.¹¹¹ Such was the local appreciation for this relationship between the city scientist and the local entrepreneur that it was recorded in Volcker's obituary as a defining aspect of his notoriety. The paper reported 'Mr Maiden, Government Botanist, looked on Mr Volckers as an authority in matters pertaining to his department and always interviewed him on his visits to the district.'¹¹²

One of the constraints of Maiden's campaign for street trees was the boundaries of his bureaucratic control. While he could readily supply trees through his nurseries and happily gave advice about street plantings, ensuring that trees were appropriately planted and nurtured fell beyond his jurisdiction. Maiden argued that one of the key aspects for the success of local tree planting was the existence of a local gardener, preferably employed by the local council, in this way trees could be tended within local communities in accordance with information disseminated by the Sydney Botanic Gardens. Maiden said in 1905:

in Sydney and out of it there still flourishes the ignorant idea that to plant a tree the only thing required is a hole. The first thing necessary is to place such work (as regards the public requirements) in the hands of a professional gardener.¹¹³

Thanks to a combination of serendipity and entrepreneurship, this role was already filled in Grafton by Maiden's correspondent, the seedsman and nursery owner Henry Volckers.

¹¹⁰ Ernestine Hill, "Grafton City of Trees," *ABC Weekly*. Newspaper clipping held at CRHS, nd.

¹¹¹ Joseph Maiden, "Report on Botanic Gardens and Domains for the Year 1906," (Sydney: Legislative Assembly New South Wales, 1907), 8-9.

¹¹² "Death of H. A. Volckers," *Clarence River Examiner*, 24 August 1911.

¹¹³ Maiden, "Tree Planting in the City Streets," 6.

According to his friend H C T Maxted, Volckers was settled in Grafton by 1869. He had emigrated from his birthplace of Holstein, Germany in 1856 to chase gold in Queensland. After a trek through New South Wales,¹¹⁴ he and his first wife Elizabeth found themselves in Grafton, where Volckers lived until his death in 1911.¹¹⁵ Volckers announced commencement of business in Prince Street in 1871.¹¹⁶ He initially opened a store and nursery and then expanded to include two other nursery sites. At times he employed up to five men, including a contingent of apprentices, who all lived at the nursery with his wife and family.¹¹⁷ The nursery supplied seeds and plants for a broad range of community needs. They stocked a 'choice collection of fruit and ornamental trees, shrubs, conifers, climbing plants, agricultural, garden and flower seeds.'¹¹⁸ This nursery serviced domestic gardens, pastoral homesteads, commercial fruit and vegetable growers, and municipal endeavours to improve the aesthetic of the town. While Maiden acknowledged that local council gardeners would be affected by the seasonal evaporation of work,¹¹⁹ in Grafton this was managed by contracting work to the Volckers nursery. One three-year contract ensured that the trees were cared for, watered, and appropriately pruned until they were properly established – all recommendations advocated by Maiden for success in tree planting.¹²⁰

In the first decade of the twentieth century, street tree planting in Grafton underwent a stylistic change. Rather than including a range of trees, as was historically the case in Grafton, it was deemed preferable to plant a single species, thus forming a uniform avenue. At this time the jacaranda *Jacaranda mimosifolia* was conferred a primary role amongst the

¹¹⁴ Richard Craigie Law, Notebooks and Newspaper Clippings Books, Vol 13, 99-104.

¹¹⁵ *Pre 1900 Clarence River Pioneer Register*, (Grafton: Clarence River Historical Society Inc.), 215.

¹¹⁶ "Notice H.A. Volkers (Sic)," *Clarence and Richmond Examiner*, 20 June 1871.

¹¹⁷ Graftonian, "Contribution to Grafton of Highest Value to City," *Daily Examiner*, 15 January 1955.

¹¹⁸ Newspaper clipping 25 May 1875, Volckers Family File, CRHS.

¹¹⁹ Maiden, "Our Parks: How to Plant and Tend a Tree.," Maiden, "Tree Planting in the City Streets."

¹²⁰ Letter from Alfred Leaney to Daily Examiner, 8 May 1957, Volckers Family History File, CRHS.

trees in the city. This change in direction, which involved substituting variation with uniformity, aligned with Maiden's preference for avenue planting. In the discussion following George Knibbs lecture on 'The Theory of City Design,' Maiden stated:

let me enunciate an axiom "one avenue one tree." The finest avenues in the world consist of one kind of tree, as by that means uniformity of growth and general appearance, which gives the main charm of an avenue, can alone be secured.¹²¹

In 1910 Volckers' apprentice Alfred Leaney took delivery of a case of eighty-four young jacarandas trees sent by the Sydney seed merchants, Anderson & Co.¹²² As a commercial enterprise, Volckers could not have accessed the free supply from the Sydney Botanic Gardens. Anderson & Co did, however, exchange seeds and living material with the Sydney Botanic Gardens over Maiden's tenure, placing all three bodies in relation with one another through the networks of reciprocity.¹²³

From this time until the 1970s, when the trend again changed to diversity, Grafton's council and community have preferred jacarandas for their streets. On 6th May 1935 jacarandas were planted at the western end of Pound Street to commemorate the silver jubilee of King George V. Each tree was sponsored by a local resident.¹²⁴ In that same year, the council inaugurated the Jacaranda Festival which has continued to take place annually each November. This festival has always attracted many visitors to the town. In 1991, John Wrigley conducted a Heritage Tree Survey and found 1457 jacarandas growing on streets all over the city.¹²⁵ Jacarandas dominate the urban landscape for a community that still calls Grafton 'a city of

¹²¹ George Knibbs, "The Theory of City Design," *Journal and Proceedings of the Royal Society of New South Wales* 35 (1901): 106.

¹²² Letter from Alfred Leaney to Daily Examiner, 8 May 1957, Volckers Family History File, CRHS.

¹²³ Maiden, "Report on Botanic Gardens and Domains."

¹²⁴ Trees file, CRHS.

¹²⁵ John Wrigley, "Grafton Heritage Tree Survey," (Grafton: Grafton City Council, 1991).

trees.¹²⁶ The native trees, present in the earlier phase of adaptation, were replaced by this transnational interloper.

Street tree planting in New South Wales did not start with Maiden and the Sydney Botanic Gardens, nor did it end when Maiden's successor George Darnell-Smith divested the institution of the Campbelltown State Nursery in 1930. This nursery combined with those at the Farm Cove site to send thousands of plants out into New South Wales. Through a particular combination of the Director, knowledge, propagation and distribution, street trees entered the Sydney Botanic Gardens and then left again. This wasn't simply a case of physical stock of seeds and seedlings coming into Sydney, but a transnational idea that travelled with narratives as well. During the nineteenth century, urban centres across the globe included street trees as urban technologies, which added shade and beauty to their streets. While such urban landscaping relies on the repetition of the outline of the street tree as an idea, the Sydney Botanic Gardens was able to effect a localising of this idea.

By combining and recombining plants, plant material and plant information, Maiden was able to take a key position in influencing the way streets were greened. He understood the form and function provided by trees. He also understood which trees grew well in Australia, actively building a map of regional variation in geography and climate that was specifically related to the introduction of plants for urban landscaping. The final ingredient that ensured change was Maiden's ability to access and then match the correct plants with towns across New South Wales. He had grafted together street trees, street tree material and street tree information and transplanted them in New South Wales towns. This was enabled by the

¹²⁶ Dockrey, *Street Trees of Grafton*.

centralisation of botanical knowledges in the library, herbarium and living collections of the Sydney Botanic Gardens. Settling was nurtured through this use of trees to reinforce non-indigenous spatial claims on urban planning in Australia.

Conclusion

Between 1896 and 1924 the Sydney Botanic Gardens was an institution that supported settlement through the mobilisation of botanical knowledges. It has been a central argument of this thesis that this was achieved by harnessing the idea of usefulness to all aspects of Sydney Botanic Gardens' work. The collections, which grew exponentially during this period, were crucial in the practices that allowed, enabled and stimulated the movement of botanical knowledges. The overarching vision of these collections was not merely to collect for the sake of the collection. Instead, the collections had come to be considered within a capitalist framework as a resource for use beyond the boundaries of the Gardens site at Farm Cove. The central figure in the practices of the Sydney Botanic Gardens was Joseph Maiden.

The Sydney Botanic Gardens engaged in the production of botanical knowledges for colonial science. By considering the practices that were employed at an institutional level, we can see *how* the Sydney Botanic Gardens produced botanical knowledges at the turn of the twentieth century. Although articulated as collecting raw material, each time a plant, branch, seedling, seed, or whole plant was moved out of its habitats, this movement transformed it into botanical knowledges. This was universal in the sense that all the material that entered the Sydney Botanic Gardens underwent this process, somewhere in the world, be that in the Himalayas in India or Hill Top in New South Wales. To that extent other institutions are

connected to the Sydney Botanic Gardens through these processes. The production of herbarium specimens, botanical illustrations, scientific descriptions and the nurturing of living plants in the nurseries and gardens constituted a significant contribution to knowledges about indigenous plants in Australia. In addition, the introduction of exotic species into the collections allowed the Sydney Botanic Gardens to engage in research regarding adaptability and acclimatisation. This kept staff abreast of contemporary practices concerning applied botany.

The material gathered, stored and grown at the Sydney Botanic Gardens supported the growth of a scientific community consisting of both professionals and amateurs. The examination of the practices implemented in the Sydney Botanic Gardens revealed an interactive, transnational community. Gathered together under the broad auspices of botanical knowledges, the people attracted by the collections were vastly different. By maintaining a type of open door policy, Maiden was able to attract participants from many different walks of life. Some of these people, like A H S Lucas, the headmaster at Sydney Grammar School became important collectors and curators of subsections of the Sydney Botanic Gardens collections. Others who never set foot in Australia, much less in the institution, also contributed to the material and intellectual cache of the institution. In this way Maiden expanded the range of people engaged in the scientific practices of the Sydney Botanic Gardens. These people, their authority and their capacity to research matters that affected the broader issues of settlement were all enabled by their relations with the collections of the Sydney Botanic Gardens.

These collecting policies changed the physical environs of the Sydney Botanic Gardens. During Maiden's directorship, the physical infrastructure consisting of purpose built buildings allowed the collection to grow and staff numbers to increase thereby enhancing the institution's capacity to undertake research. During this time, the institution also developed an international profile. These networks which operated at multiple levels – local, national, interstate, interpersonal, imperial, inter-institutional and international – were premised on the reciprocity of plants, plant material and plant information. In this way, the Sydney Botanic Gardens cannot be confined to its position as an outpost; instead this history wins 'back some agency in the global narrative.'¹ The referents of empire and nation are acknowledged for their central importance in the colonisation and settlement of Australia, but this thesis has shown that empire and nation should not be viewed as closed systems, but as structures of governance with porous boundaries. This means seeing Australia as a place where things came to and left from, rather than positioned within a set of spatial or political scales.

The Sydney Botanic Gardens' capacity to engage and mobilise these types of transnational networks indicated a growing boldness on the part of colonial scientists. Maiden's actions and his own belief in the importance of the work established and produced in Australia meant that he could circumvent the hierarchies usually assumed to exist between the metropole and their colonies. Instead, the relations exemplified in this thesis show that this was, as Endersby notes, a continual process of negotiation.² These were lateral relations. Although Kew acknowledged the Sydney Botanic Gardens, they did not always endorse the expertise of Maiden in the way of others in the network. Maiden's attention to the importance of correspondence in establishing and maintaining an institutional practice supported the vigour

¹ Griffiths and Robin, *Ecology and Empire: Environmental History of Settler Societies*, 8-9.

² Endersby, *Imperial Nature: Joseph Hooker and the Practices of Victorian Science*.

of the collections. Maiden drew knowledge from the network; from people and institutions as variously located as Berlin, Ventimiglia, Washington and Buenos Aires. This wasn't simply a matter of a growing confidence, but of authority, expertise, self-identity and institutional importance woven together and built upon these lateral and reciprocal relations.

Paradoxically, while the Sydney Botanic Gardens disseminated information, it never had any real control about how botanical knowledges might create change in local places. Instead of neat lines of transit, botanical knowledges had unique travelling lives. The types of science performed at the Sydney Botanic Gardens acted as the synthesiser and hinge upon which the circulation continued into colonial situations generating consequences for local people and environments. Once botanical knowledges left the institution and became embedded in other sorts of networks and environments, alterations took place. It was not the role of the institution to organise the day-to-day management of settlement environments. Their role was to support settlement through dissemination of expertise and plant material. This meant that although Maiden recommended time and again that single tree species be used to create avenues, mixtures of trees could find their way into the streetscapes of urban towns. While Maiden advocated wattle plantations in Australia, the publications and plants contributed to the scientific forestry that was taken up with greater commercial success in South Africa. Unfortunately, the fact that Maiden recommended and supported William Sinclair's prickly pear mulching machine, didn't mean that he had the capacity to implement such technology in prickly pear land. The best that Maiden and the staff at the Sydney Botanic Gardens could do was to provide and distribute the botanical knowledges available to them.

As Maiden, his staff and other locals interested in botanising moved through the bush, they enacted an imaginative possession of the land. By taking plants and plant material from the bush, they engaged in a process that brought the land into the laboratory. This work began a chain of events, and collecting must be considered as a part of this chain. The practice of collecting has been considered in this thesis as part of an extended network, not as a simple act in itself. If it was the network that took precedence then we see, as Latour does that 'following the thousand paths with their strange topology, leads from the local to the global and return to the local.'³ Traversing the land and travelling through it enabled a colonial knowing that was expressed as a rightful possession of place. As these materials were transferred back to the laboratories at the Sydney Botanic Gardens, they were transformed into pliable documentation of Australian flora. As part of these processes, particularly those concerning the naming of botany, eucalyptus carried representations of the racialised structures of the settler-colony. This was no simple production of a botanical knowledge, but instead indicated the complexity of the overlaps between science, economic botany, and the cultural politics of a White Australia. The Sydney Botanic Gardens were instrumental in harnessing ideas from the discourses of the day and imbedding them in the production of botanical knowledges.

The institution was not beyond or immune to the cultural discourse that swirled through colonial science at that time. Maiden and the Sydney Botanic Gardens were complicit in the marginalisation of indigenous knowledges in the name of promoting usefulness. Partly, this was achieved through a cherry-picking of knowledge, whereby Maiden privileged indigenous knowledge that complied with a colonial version of usefulness. This was particularly the case

³ Bruno Latour, *We Have Never Been Modern*, trans. Catherine Porter (Cambridge: Harvard University Press, 1991), 118.

with food plants which were notated wherever he could access the relevant knowledge. Maiden sidelined other indigenous knowledge as useless within his research parameters. What must also be acknowledged was Maiden's imperial and paternalistic approach to land, plants, plant material and plant information. This approach precluded him from developing relations with indigenous people. Instead this knowledge was clipped and collected, then reiterated in a fashion that reflected the influences of a White Australia.

Indigeneity was ever present in the useful work of the Botanic Gardens. It often materialised as an uncanny presence.⁴ Indigeneity surfaced in the language of othering in the story of the prickly pear. There was irony at the heart of the debates about elevating wattle as a national symbol. Indigenous plants supplied the means to belong, to indigenise people from elsewhere, while indigenous people themselves were being dispossessed, relocated and removed from their homelands. Similarly, the move to introduce a transnational form of street trees elided difference in favour of a universal image. In a settler-colony, which operated in accordance with the colonial logic of indigenous annihilation, it was little wonder that the cultural attachments of indigenous life were relegated to the background in the process of translation and re-translation. In the Australian context divorcing of plants from indigenous knowledge systems was assumed before collectors even set foot upon other peoples' lands. This process involved a double movement; in the first instance plants lost the life and therefore the narratives within which they operated, before being re-shaped in the hands of these colonial scientists. Plants became malleable colonial objects that transited in a way that allowed some narratives to be retained, but others discarded or adapted to other local conditions.

⁴ Gelder and Jacobs, *Uncanny Australia: Sacredness and Identity in a Postcolonial Nation*, 31.

One of the active ingredients in Maiden's approach to botanical knowledges was the way that they were layered with cultural narratives. These tales are told and circulated differently to other more conventional narratives. Scientists narrate the imbrications between material culture, in the form of plants, and cultural events, discourses, campaigns, and the process of settlement in Australia. These multiplied tales and objects produce networks that gain their force in the continual accumulation of *both* material and culture. This created a layered effect, which as Stephen Muecke suggests, transforms an object into something different altogether. He notes: 'It is through the tales that are spun about the commodities that *values* are added to *value*, for the market works on fictions, lending magic to the aura of the commodity(original emphasis).'⁵ Maiden was able to spin these tales about plants, not so that the community would respond as if these were fictions, but so that values were accumulated for the sites of settlement.

Nationalism, it turns out, was one of the central motifs of the work of the Sydney Botanic Gardens. Ian Tyrrell argues that that 'the nation itself is produced transnationally'⁶, a process that was played out at the Sydney Botanic Gardens. At each stage of the production of botanical knowledges and the subsequent mobilisation in Australian culture, the nation was produced, reiterated, reinforced and retold. It was the transnational resources and the multiple botanical knowledges accumulated and produced in the Sydney Botanic Gardens that were put to work for the nation. The lofty ideas of nationalism were made concrete in each of the practices considered here. This harnessing of national ideals and goals allowed Maiden to

⁵ Muecke, "What Makes a Carpet Fly? Cultural Studies in the Indian Ocean," 33.

⁶ Ian Tyrrell, *Transnational Nation: United States History in Global Perspective since 1789* (New York: Palgrave Macmillan, 2007), 3.

pitch the work of the Sydney Botanic Gardens as important for future wealth and prosperity. By constantly binding usefulness to nationalism, Maiden was able to increase the size of the collections and their attendant scientific practice during difficult economic times. The transnational networks enabled Maiden to lay such claims to usefulness for the nation. These are intertwined into parts of the same history.

Each of the products of the Sydney Botanic Gardens, whether plants, seedlings, seeds, pamphlets, reports or scientific descriptions were made mobile through the networks of reciprocity that operated from this site. This mobilisation created a national presence in a transnational field. Such nationalism never manifested in a uniform way in the work of the Sydney Botanic Gardens. In delineating, naming and understanding the biology of each of the prickly pear species that Maiden was able to elevate useful knowledge to the national level. Agriculturalists and farmers required cutting edge information in order to effect the displacement of the pest. Intervention and advice produced in the Sydney location contributed to the national imperative for closer settlement.

The manner in which various ways of knowing and understanding indigenous plants, such as the wattle, flowed through the Sydney Botanic Gardens demonstrates how these processes were complex and multiple. At the very same time that Maiden was disseminating botanical knowledges about wattle as economic botany, he was creating a particular symbolic representation of Australia via the association of wealth with an indigenous species. The very structures of reciprocity and movement that Maiden had capitalised upon in his quest to understand prickly pear, resulted in wattle moving into the transnational network. In South

Africa different labour and capital relationships created the successful conditions for wattle as economic botany.

Street trees help us to imagine the way that settlement environments in rural Australia appeared through the application of botanical knowledges accessed through transnational networks. The campaign to include trees into streetscapes operated across the western world. As these ideas took hold in many nations, empires, towns and cities, a template entered Australia that shifted urban planning from utility to creating environs that civilised citizens. This was a local response to a transnational trend. Australia took its place as a sophisticated nation through attention to the aesthetics of the towns generated through closer settlement. Neither indigenous, nor exotic trees were necessarily preferred for street trees; instead, the transnational resources available through the Sydney Botanic Gardens allowed the adaptation of a transnational image.

Considering this process as one that was anchored in the idea of usefulness opens up these stories of plants, plant material and plant information. No longer do we need to see the work of botanic gardens as limited to the provision of recreation with a separate scientific centre within a bounded space. Instead, the Sydney Botanic Gardens were shown to be a nodal institution; it connected plants, places and people transnationally. This meant that the institution worked on local Australian problems and events, while also connecting to international people and places, through the common threads of plants, plant material and plant information. Usefulness was such a broad term that it could catch all manner of stories, events and problems.

Following this logic, the Sydney Botanic Gardens emerged as a node within multiple transnational networks depending upon the movement of plants, plant material and plant information. This acknowledges both the specificity of locale and the heterogeneity of the botanical knowledges entangled in global movement of plants, in other words, these cultures sit in places too.⁷ The local town, the agricultural field, the laboratory and the back yard are all connected via the Sydney Botanic Gardens to narratives, ideas, science, politics and cultures from elsewhere. It follows, then, that these relations are locational and performed in each settlement site dependent on the specific arrangement of these transnational knowledges in local places. Doreen Massey argues that the local is a meeting place, a process that realigns and changes according to time and space. The local, she observes 'is constructed out of a particular constellation of social relations, meeting and weaving together at a particular locus.'⁸ This capacity to realign, or as Tuhiwai Smith would have it, 'to rearrange, represent and redistribute'⁹ the botanical knowledges in the collections was the major legacy of Maiden's directorship of the Sydney Botanic Gardens.



On 1st July 1924 Dr George Darnell-Smith took up the position of Director of the Sydney Botanic Gardens. Maiden retired to Turrumurra on Sydney's upper north shore. Darnell-Smith had been the foundation head of the Biological Branch of the Department of

⁷ Arturo Escobar, "Culture Sits in Places: Reflections on Globalism and Subaltern Strategies of Localization," *Political Geography* 20 (2001): 144-47.

⁸ Doreen Massey, *Space, Place and Gender*, Cambridge, Polity, (1994), 154.

⁹ Tuhiwai Smith, *Decolonizing Methodologies: Research and Indigenous Peoples*, 62.

Agriculture, a contemporary of Maiden's who had worked with him on prickly pear matters in the final years of his directorship. Darnell-Smith was not to work exclusively for the Sydney Botanic Gardens in the manner of Maiden and his predecessors. Instead, the duties attached to this post were added to his duties at the Biological Branch. Darnell Smith relied on delegation of management to two key personnel: Edward Norton, Curator of the Gardens and Centennial Park and Edwin Cheel, Curator of the Herbarium.¹⁰ This division in management mirrors the changes to the Melbourne Botanic Gardens fifty-one years earlier.¹¹ The parklands and the scientific institution were apparently split asunder.

In his reporting to the government in 1925, Darnell-Smith indicated that he had rearranged the sections of the Sydney Botanic Gardens. Rather than the herbarium, museum, library and living collections, the bureaucratic biologist shaped the work of the institution through disciplinary categories. The new departments were horticulture, systematic botany, agrostology and biology.¹² The clerical section, which encompassed the correspondence, accounts, regulations and library, was valued differently under this new regime. The museum disappeared altogether. One of the first interventions into the living collection was the relocation of Maiden's prickly pears to the succulent garden. Science ceased to be mixed together with the aesthetics and recreational use of the parklands.¹³ While on a functional level the Sydney Botanic Garden still supported (or was supported by) a herbarium, library and living collections, Darnell-Smith shifted the emphasis of the work to the professionalisation of science in accordance with academic guidelines. Intellectual property

¹⁰ Gilbert, *The Royal Botanic Gardens, Sydney: A History 1816-1985*, 142-46.

¹¹ Prescott, *The Royal Botanic Gardens, Melbourne: A History from 1845-1970*, 79-90.

¹² Gilbert, *The Little Giant: The Life and Work of Joseph Henry Maiden 1859-1925*.

¹³ ———, *The Royal Botanic Gardens, Sydney: A History 1816-1985*.

became the constitutional agent for the Sydney Botanic Gardens as an institution. In taking this action, Darnell-Smith pushed the collections into the background.

Two of the collections doubtless remained intact during these changes – the herbarium and the library. Each continued to be crucial to the various sections now operating across the gardens. Instead of sections in their own right they operated in the background, continuing to supply botanical knowledges to Sydney Botanic Gardens' staff for their professional work. In 1929, as the depression started to take hold, Darnell-Smith estimated that the herbarium should be valued at £7500 and the library, with its 10,000 volumes, £3000.¹⁴ These collections, due to their size and significance were saved in the rationalisations of this bleak period that saw, for example, the Campbelltown nursery sold for land value.¹⁵ Maiden's long-term commitment to the size of the collections had stabilised them beyond his tenure. These collections continue to be the institution's premium resource even as they effectively disappeared into the hinterland of public and policy spheres.¹⁶

The Sydney Botanic Gardens remains an institution engaged in the mobilisation of botanical knowledges through transnational networks. The current configuration of the institution demonstrates continuity with many of the practices analysed in this thesis. The National Herbarium and the Royal Botanic Gardens Sydney Library continue to operate as core businesses within the institution. The National Herbarium continues to exchanges specimens and knowledges with other institutions across the globe. The framework and orientation of

¹⁴ Ibid.

¹⁵ Ibid.

¹⁶ Law, *After Method: Mess in Social Science Research*.

the scientific work now work within the context of conservation and biodiversity legislation.

The three key objectives of the institution are:

- to increase and disseminate knowledge about the plant life of New South Wales and Australia;
- to improve the National Herbarium of New South Wales and the Trust's collections of living and preserved plant life;
- stewardship of Trust estates — the Royal Botanic Gardens, the Domain, Mount Annan Botanic Garden and Mount Tomah Botanic Garden — and encouraging their use and enjoyment by the public.¹⁷

All of these objectives are energised by the capacities built between 1896 and 1924. The flexibility of the collections, as demonstrated by their adaptability to current cultural and scientific concerns, reflects the policies developed by Maiden. The Sydney Botanic Gardens continue to collect plants, plant material and plant information. Transnational plant science continues to move plants, plant material and plant information through the Sydney site.

Subsidiary gardens at Mount Annan and Mount Tomah have created new spaces for specialised living collections. One role for these gardens is didactic, with 'learning by looking' mode a continuing aspect of botanical education initially introduced in 1816. Additionally, Mount Annan houses the New South Wales Seedbank, established in 1986. This group joined the Millennium Seedbank project led by the Royal Botanic Gardens Kew in 1999. Collecting indigenous flora as an insurance policy against future environmental devastation continues the past practices of botanising in the Australian bush.

¹⁷ Sydney, "Sydney's Botanic Bicentenary."

The Sydney Botanic Gardens are already engaging in a decolonising process, as outlined by Tuhiwai Smith.¹⁸ Almost all of the nineteenth century Australian colonial collections that invaded indigenous life were initiated and maintained through collecting policies. These policies were detrimental to the very people that they sought to put under the lens. In recent times, these repositories have seen a call from indigenous activists for material culture – artefacts, skeletons, paintings – to be returned to the communities from which they were taken.¹⁹ Indigenous people seeking to re-establish family and kin, in part, are using the extensive records held by the various state run protection boards. This means adapting, critiquing, assessing and reading records from decolonised points of view. The Sydney Botanic Gardens have already made significant moves to incorporate better approaches to indigenous knowledge within the Australian context.

The complex relations between Aboriginal people, plants, ecosystems and land management is of growing research interest in Australia. Collectors and scientists no longer always enter these fields with the view of extraction, rather, their focus is on interaction. Environmental historians and ethnobotanists are seeking ways of multiplying the perspectives regarding plants, plant material and plant information.²⁰ The Sydney Botanic Gardens have forged a range of projects as pathways to reconciliation between indigenous and non-indigenous peoples. These include: education tours; stories of the traditional owners of each of the parklands – Cadigal, Dharug and Dh'awaral nations; creation of memorials and gardens

¹⁸ Tuhiwai Smith, *Decolonizing Methodologies: Research and Indigenous Peoples*.

¹⁹ South Australian Museum, Paul Turnbull, "Introduction: Learning to Understand Western and Indigenous Sciences," *Humanities Research* 1 (2000).

²⁰ See for example Bird Rose, *Nourishing Terrains: Australian Aboriginal Views of Landscape and Wilderness*, Main, *Heartland: The Regeneration of Rural Place*. For an interesting perspective on this see ABC Radio National, Hindsight's four part program 'The Australian Landscape: A Cultural Landscape' <http://www.abc.net.au/rn/hindsight/features/landscape/default.htm> sighted 22 October 2008.

celebrating the connections between indigenous life and land; and the employment of specialised indigenous staff.

The collections accumulated and established during Maiden's era were always meant to be a resource. They were never meant to be limited to pure science. Rather, and as demonstrated in these histories, their use was only to be limited by the imagination of the custodians of the collections. Since the collections are drawn from indigenous lands, it would be fitting that these botanical knowledges circulated back to, and are used by, other indigenous communities. Perhaps the postcolonial narrative of the Sydney Botanic Gardens might include more participation from indigenous peoples. Maiden could never have anticipated this particular use of the collections, but the beauty of his collection style was that it created cultural possibilities through constant and continual mobilisation.

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