

History, Politics and Conflict in the Southern Murray-Darling Basin: An ethnography



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**Senior Research Anthropologist
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Perth, July 2019

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Author Biography and Declaration of Interest

The author of this study was born in Griffith, NSW, and grew up from the age of four in Deniliquin. He is directly descended along many lines from early pioneering families dating from the 1840s along the Murray, Murrumbidgee and Lachlan Rivers; from Port Phillip in Victoria, Kapunda and Mount Gambier in South Australia, Morago and Pretty Pine on the Deniliquin Run, to Merriwagga, Hillston, Temora and beyond.

Aside from attending Albury Grammar School and a year in Sydney, he lived and worked in Deniliquin continuously from 1954 to 1975.

He is related through his mother's family to historian and academic the late Keith Swan of Wagga, and historian Bill Gammage of ANU, Canberra, sharing their interest in Indigenous peoples, colonial history and the environment. His ancestry further includes long-standing service to local government in Carrathool Shire and the Municipality of Deniliquin.

His grandfather Benjamin Varcoe served as Carrathool shire overseer, then councillor and president of Carrathool Shire alongside great-uncles Samuel Nixon and Alexander Macarthur over the long period from the 1880s through to the onset of World War II,¹ while his father Ron Hardwick was an alderman and deputy mayor of Deniliquin in the late 1960s and early 1970s.

None of this is any of their doing, of course.

After leaving Deniliquin in 1975, following 10 years working around Australia including extended periods on cattle stations and Indigenous communities, in 1986 he accepted a place at the University of Western Australia where he graduated in 1989 with Honours in Anthropology with a second major in Australian colonial historiography, including distinctions in Psychology and Industrial Relations dealing with union strike patterns in particular.

His field research over the next 20 years covered conflict management among mining companies and Indigenous communities throughout Western Australia, environmental monitoring among wheat-belt farmers and Margaret River wine growers, and the settlement history of the lower southwest of Western Australia resulting in a published history of the Alfred Pickmore Bussell estate, Wallcliffe House².

He has presented conference and peer reviewed papers on the Irish in Western Australia, the precedents, foundation and early development of the Swan River Colony, the establishment of the magistracy in Western Australia, and the social and environmental impacts of European settlement on the forests and wetlands of the Cape-to-Cape region of WA's southwest.

In 2009 he returned to full time study at the University of Western Australia to complete a 2nd Honours degree in Literature and English toward examining the language used in addressing conflict among Indigenous and other remote and rural communities across inland and outback Australia, then during 2012-2014 completed a Masters in Criminal Justice with the Crime Research Centre, Law Faculty, University of Western Australia, followed by a post-graduate Certificate in Agriculture, Economics and Nature.

¹ Parker, W. G., *All Those Yesterdays: A history of Carrathool Shire*, Hogbin Poole Printers, Sydney, 1975.

² Hardwick, Gil, *Castle Dangerous, The Estate of Alfred Pickmore Bussell, Margaret River, Western Australia*, Hesperian Press, 2003.

In 2009 he was further elected Senior Fellow of the International Society for Philosophical Enquiry, having been elected Fellow of the Society in 1982.

He has served on the council of the WA Land Management Society as a specialist adviser on environmental data acquisition, WISALTS Committee investigating farmland salination across the WA Wheatbelt, the Margaret River Rights in Water and Irrigation Submissions Committee and Southwest Catchments Council, and is founding member of the Cape to Cape Catchments Group. He is currently serving as a committee member of the University of Western Australia Historical Society.

Informed by family relationships, cultural affiliation and ongoing personal friendships, half a lifetime of intimately close participant observation in the affairs of the Riverina districts of NSW followed by 35 years of professional detachment, his interest in the Mid-Murray Catchment is well within his expertise in conflict resolution.

Residing in Perth, Western Australia, he has no business, financial, research funding or other interest in Deniliquin, the Southwest Riverina, or the Murray-Darling Basin.

Introduction

Throughout this paper the words *politics* and *political* are taken to mean broad public policy debate among citizens of the Commonwealth, neither inherently exclusive nor restricted to partisan election platforms or parliamentary debate, nor indeed media coverage.

In this respect, class action against the Murray-Darling Basin Authority recently filed in the Supreme Court of NSW and reported widely throughout regional media, can be considered an act of desperation following decades of frustration and anger among affected communities along the Central Murray Basin. The correlative electoral push-back across rural inland Australia against arguably effete, ideology-driven coastal inner-city electorates in the federal election of 18 May 2019 merely serves to drive the point home.

Precursors to this action arose from protracted negotiations between the Australian Government and New South Wales, Queensland and South Australian state governments with responsibility for implementing sustainable diversion limits (SDLs), until a change of government in Canberra initiated a water buy-back scheme and established a centralised Murray-Darling Basin Authority to oversee management of the Basin as a whole.

Rather than proceeding with negotiated outcomes, the South Australian state Labor government instead threatened a constitutional challenge forcing a reduction in surface water extraction by an extra 450 GL a year to be treated separately from the 2,750 GL/year originally agreed, with a separate supplemental budget of \$1.77 billion.³

South Australia also subsequently launched a Royal Commission of its own to "investigate the operations and effectiveness of the Murray-Darling Basin system,"⁴ while in the meantime, according to ABC media, the New South Wales government declared it would not be held to ransom by South Australia, and Victoria accused South Australia of attempted blackmail, holding upstream communities hostage to their political demands; insisting in the run-up to the 2018 South Australian state election they should "call off their dogs."⁵

In the event, Jay Weatherill's Labor government in South Australia lost to the Liberals under Steven Marshall, and then in June 2019 Southern Riverina Irrigators farming along the Mid-Murray finally filed a class action of their own against the Murray-Darling Basin Authority.

While the Murray-Darling Basin Authority insists it has done nothing illegal, it is nonetheless plainly ineffective in carrying out its appointed task; overseeing over the summer of 2018-2019 the draining of both Darling and Murray River systems so as to maintain water levels in the Lower Lakes at the Murray River mouth, ostensibly to prevent exposure of acid sulphate soils and reported environmental degradation, when both lakes are kept fresh by Murray River flows blocked by the Goolwa Barrages which prevent tidal action naturally maintaining water levels with fluctuating salt and brackish water depending on droughts and floods far upstream.

³ Grafton, Robert Quenton, Policy review of water reform in the Murray-Darling Basin, Australia: the "do's" and "do'nots", *Australian Journal of Agricultural and Resource Economics*, Vol. 63, p. 120.

⁴ South Australia, *Murray-Darling Basin Royal Commission*, Report, 2019.

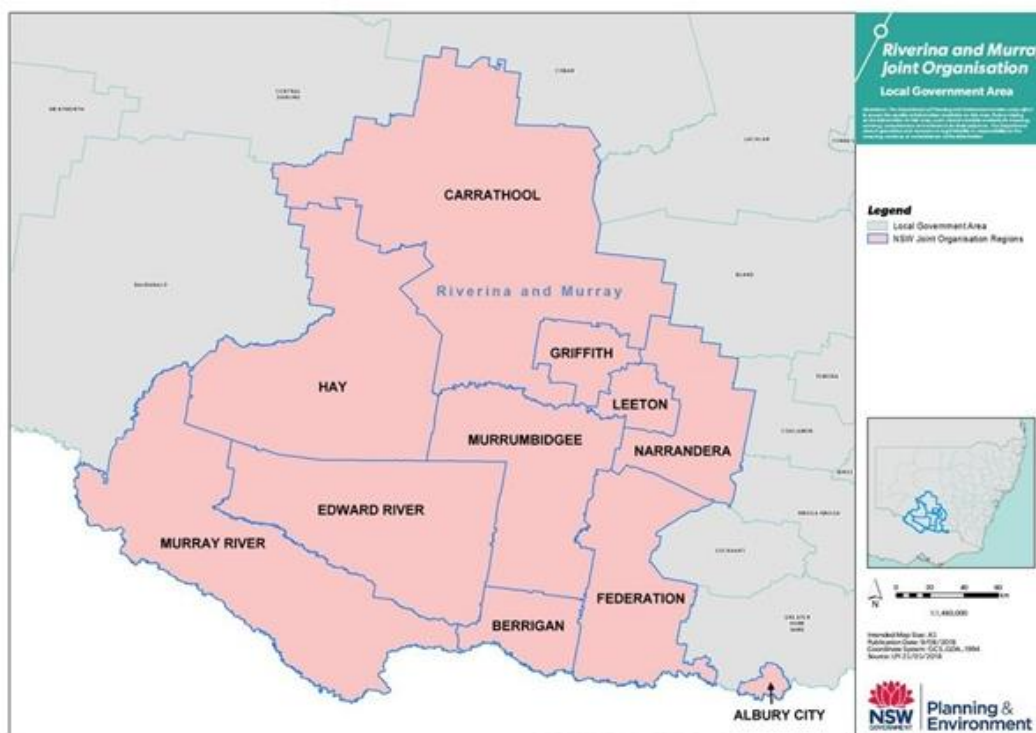
⁵ ABC News, *Murray-Darling Basin: SA accused of holding Murray River to ransom over future of billion-dollar plan*, <https://www.abc.net.au/news/rural/2017-12-19/murray-darling-basin-sa-accused-of-holding-river-to-ransom/9273614>, accessed 18 July 2019.

The point to be made is that the current condition of the lakes has nothing to do with upstream drought, but construction during the 1930s of the Goolwa Barrages blocking tidal action in the estuary. The question is not merely concerned with 'legality' of the decision to drain the upstream Basin in order to maintain estuarine fresh water levels, but with the entrenched political impasse creating the situation in the first place; it's history and aetiology, and its impracticality and ineffectiveness is resolving partisan dispute, exacerbating historical antagonism among the Basin states and more to the point between governing political parties themselves.

This paper seeks to discuss the historical, philosophical and political background to chronic miscommunication and agency malresponsiveness giving rise to such appeal to the supreme court of the state by upstream groups over loss of access to water, while taking into proper account regional electoral push-back against the capital cities.

In examining that background, it is understood that to a considerable extent, miscommunication and failure to engage regional communities has been entrenched in Australia politics since the early colonial period, consisting quite as much in the same failure to engage reasonably with Australia's Indigenous peoples and manifest instead likewise in incessant interstate bickering.

To contain and focus discussion, the region being addressed generally encompasses the Edward River and Murray River Local Government Areas, and more broadly the southern part of the Riverina Bioregion as defined under the NSW Biodiversity Conservation Act 2016, including those communities administered locally by the Riverina and Murray Joint Organisation of regional local government bodies (RAMJO).



The 2010 ABARE-BRS report, *Indicators of Community Vulnerability and Adaptive Capacity across the Murray-Darling Basin* seeks to assert a limited, abstracted, sociological notion of community, as follows:

The term community has been applied to three different contexts. Communities of place refer to people living in a given geographical area (for example, Narrabri); community of interest refers to those who share a common interest, such as an industry; community of identity refers to people who take an important part of their identity from some characteristic (for example, the Aboriginal community).⁶

The act of overlaying maps of the region with a new designation 'Mid-Murray Catchment' in an emergent yet shifting public discourse on water in rural Australia in that respect merely serves to further obfuscate and assign to something else called 'history' that far more central importance of the Riverina, in terms of Australia's economic growth and resilience over the very long term, and indeed its sense of itself as a nation.

A more comprehensive anthropological understanding, by contrast - the redundant, essentially 19th century notion of 'primitive' notwithstanding - considers that far broader "complex whole which includes knowledge, belief, art, law, morals, custom, and any other capabilities and habits acquired by man as a member of society,"⁷ and accordingly seeks to probe in greater depth those differences in knowledge, belief, art, law, morals, custom, and embeddedness in landscapes, bioregional adaptation and familiarity with the land which give rise to such bitter conflict between residents of districts affected by changing, often capricious government policy and those agencies charged with implementation and enforcement.

While in some respects inherited from early settlement of Australia as a young, yet to mature country, the Riverina district of NSW may well be considered a frontier environment - reinforced by a notion of closer settlement and with it regional urbanisation to the east and south - focused enquiry reveals that the region is not so peripheral but of central importance not only to the state of New South Wales but to Australia as a whole.

This paper will examine that central importance and argue that rather than being marginal the region represents a significant economic, historical and cultural bloc carrying markedly different, more deeply embedded norms and aspirations from the largely immigrant population cohorts perched around the rim of the Australian continent which today comprise the political majority; not quite Indigenous in a fair and proper sense, but native nonetheless.

This paper will argue further that regional productivity and with it prosperity is impacted far less significantly by availability of irrigation water as such, but by far-flung markets and remote centres of political power carrying their own habits, beliefs and prejudices which inform their own political choices; combined with mainstream media acting to overwhelm and silence regional voices in the same way Indigenous voices have been silenced, giving rise to such disconnection from empirical reality presented as intellectual rigor and scientific objectivity that no matter which way decision modalities turn, the effect will always be the same.

It is neither sufficient to argue that decisions detrimental to communities made by government agencies are 'not illegal', when those same agencies lobbied for requisite legislative amendments

⁶ Australian Bureau of Agricultural and Resource Economics, *Indicators of community vulnerability and adaptive capacity across the Murray-Darling Basin—a focus on irrigation in agriculture*, ABARE–BRS Client Report, Canberra, October.2010, Glossary, p. vi.

⁷ Tylor, Edward Burnett. *Primitive Culture*, New York: J.P. Putnam's Sons, 1920 [1871], p.1.

authorising their goals and ambitions. Here law is thus read accordingly as the Common Law, as distinct from legislation which is read as policy.

Likewise, manufactured alarm over 'global warming' and 'climate change' needs to be understood better before critical decisions are made, when we have no clear evidence being presented on whether Earth's climate is actually changing (read here as a statistical skew on assumed normal distribution of available data) due to anthropogenic impacts or otherwise, or natural variability (read as a statistical kurtosis on said normal distribution).

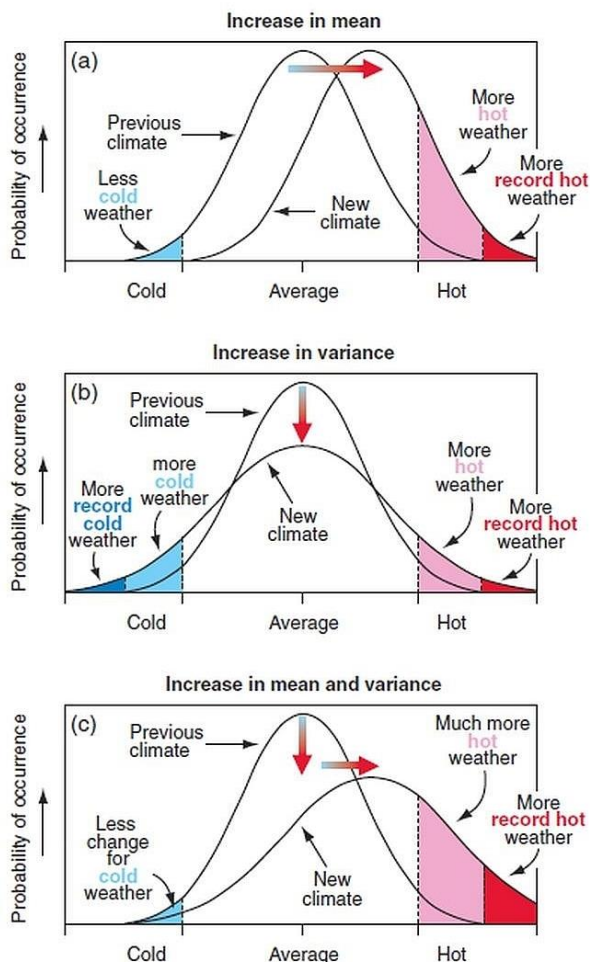


Figure 2.32: Schematic showing the effect on extreme temperatures when (a) the mean temperature increases, (b) the variance increases, and (c) when both the mean and variance increase for a normal distribution of temperature.

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Exacerbating this problem of network connection failure over vast distances has seen in recent times a shift toward referencing 'science' as the accepted mode of authority rather than equitably shared access to empirical field data allowing common conclusions to be drawn. Science is not a thing. Science does not exist empirically. Science is practice, predicated upon a logic arising from Enlightenment revelations concerning the nature of reality and how it is to be reliably

⁸ Folland, C.K., T.R. Karl, J.R. Christy, R.A. Clarke, G.V. Gruza, J. Jouzel, M.E. Mann, J. Oerlemans, M.J. Salinger and S.-W. Wang, 2001: Observed Climate Variability and Change. In: *Climate Change 2001: The Scientific Basis. Contribution of Working Group I to the Third Assessment Report of the Intergovernmental Panel on Climate Change*, Houghton, J.T., Y. Ding, D.J. Griggs, M. Noguer, P.J. van der Linden, X. Dai, K. Maskell, and C.A. Johnson (eds.). Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, p.155.

accessed; on reflections on the validity of questions being asked and the debates and discussions arising from them; on procedures for establishing the reliability of data gathered during the course of enquiry; and not least on protocols for engaging consultation with peers and colleagues, stakeholders, and others involved, little of which is evident in the Murray-Darling Basin Plan and its precursors and antecedents.⁹

The same methodological issues need to be addressed here, in that while the *etic* approach of tenured science-oriented agency staff - with their interest in asserting government authority over empirical fact - supposes that local people are often too involved, too immersed in what they are doing to be impartial, where looking at things only from the outside renders human beings, on the other hand, as objects - it disconnects and labels them.

The *emic* approach thus seeks to investigate how local people are being affected, how they are thinking and responding as determined by their own, autochthonous knowledge, beliefs and morality; what is meaningful to them, how they respond to external stimuli, and the longstanding customs and habits their own understandings of themselves and their environment give rise to.¹⁰

Either way, the real effect of climate change/climate variability exhibits marginal impacts against the sheer scale of the already familiar El Niño–Southern Oscillation (ENSO) and Indian Ocean Dipole cycles, and the impacts of ill-considered management and policy decisions among governments and their agencies bearing down on the subject population.

In this respect too, big cities, governments, politicians and media proclaiming drought and 'climate emergency'¹¹ from afar, based on reports coming in from overseas rather than generated locally, is no excuse for the current and ongoing malaise; the Murray-Darling Basin has always faced cyclic and prolonged drought and severe floods out on the central-western flood plains, from the earliest settlers to the present.

It remains to be seen whether Riverina people are so incapable of rigorous, well-informed, review and comment on water policy that we haven't been consulted so systematically on the matters raised. We are presented rather with a series of socio-economic impact assessments abstracted from ABS, ABARES and Frontier Economics data on the towns and districts affected, which ignore the people themselves.

Reasonably, within the Social Sciences, survey data and statistical indicators derived from them represent the start of ongoing field research not the end. To avoid conflict, a reasonable balance needs to be maintained, *etic* alienation circumvented, communication established not merely toward correcting errors and ameliorating collateral damage, but circumventing the problems

⁹ See, for example, Robinson, Daniel Sommer, *The Principles of Reasoning: An Introduction to Logic and Scientific Method*, Appleton-Century-Crofts; Cohen Morris R. and Nagel Ernest, *An Introduction to Logic and Scientific Method*, Routledge & Kegan Paul, 1951; Anastasi, Anne, *Psychological Testing*, Collier Macmillan Ltd, 1968; Mills, Albert J., Durepos G. and Wiebe E. (Eds.), *Encyclopedia of Case Study Research*, Thousand Oaks, CA: SAGE Publications, 2010.

¹⁰ For further discussion, see Dundes, Alan, "From Etic to Emic Units in the Structural Study of Folktales", *Journal of American Folklore*, 75, No. 296 1962. pp. 95–105; Goodenough, Ward, "Describing a Culture", *Description and Comparison in Cultural Anthropology*, Cambridge, UK: Cambridge University Press, 1970, pp. 104–119; Harris, Marvin, "History and Significance of the Emic/Etic Distinction", *Annual Review of Anthropology*, 5, 1976, pp. 329–350.

¹¹ City of Sydney, *Resolution of Council*, 24 June 2019, [https://meetings.cityofsydney.nsw.gov.au/documents/d1250/Printed decision Our Response to the Climate Emergency.pdf?T=5](https://meetings.cityofsydney.nsw.gov.au/documents/d1250/Printed%20decision%20Our%20Response%20to%20the%20Climate%20Emergency.pdf?T=5), accessed 30 June 2019

being created well before the fact. To complete the work, the people being studied need to be heard; not just through legal proceedings and the ballot box only ever after the fact but routinely, practicably, systematically, as a matter of course.

People need to be allowed to review and critique the agency accounting of themselves on an ongoing basis, and iron out any creases in the narrative being constructed about them well before the damage is done.

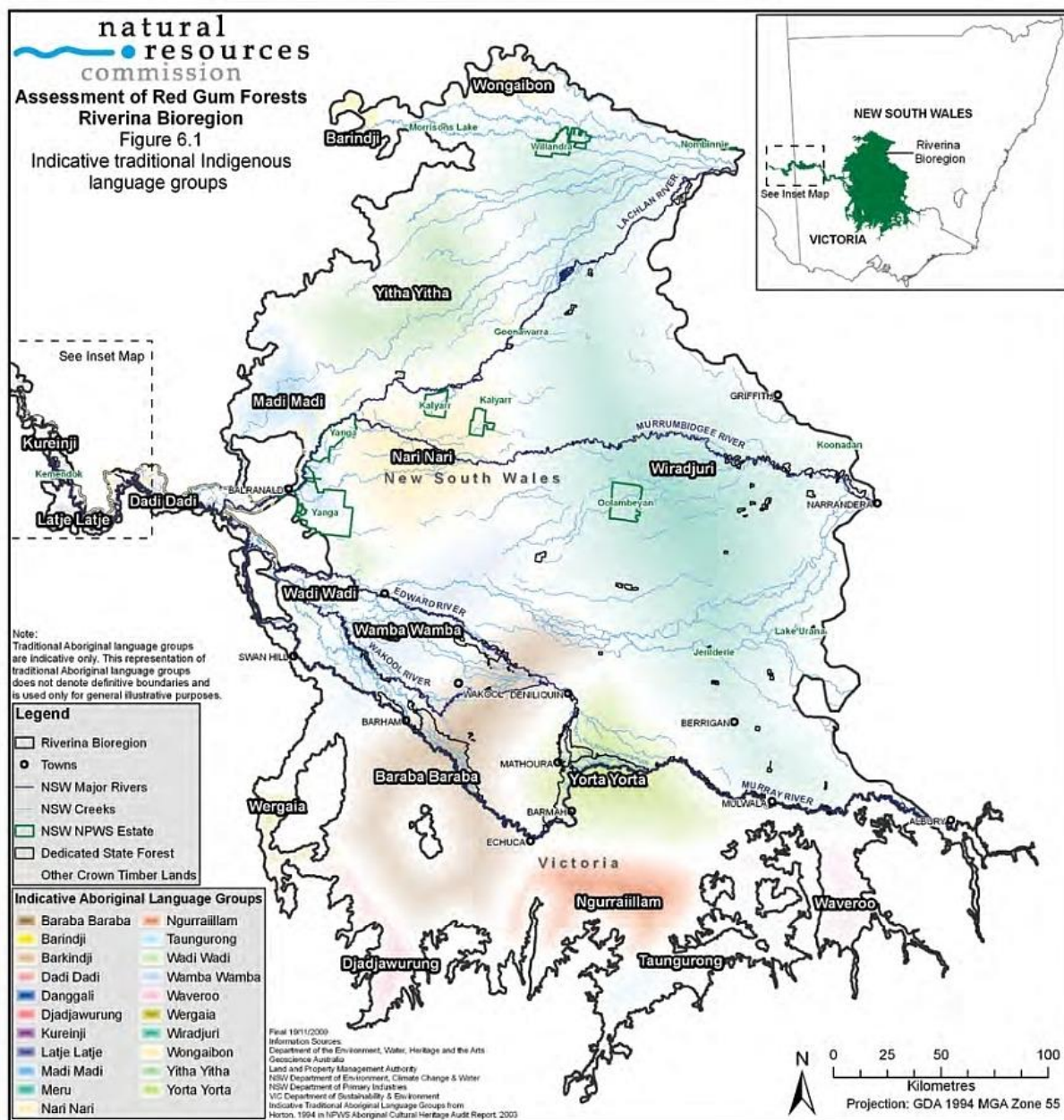
What is conspicuously absent throughout these proceedings is coherent, ongoing public and stakeholder consultation on policy which reliably and comprehensively addresses the issues being raised, and at the same time routine impact and compliance monitoring which feeds data into the system and is openly available to public scrutiny in real time, allowing effective discussion across the broad spectrum of interest to proceed and corrections made in a prompt and timely manner.

This paper seeks to iron out those creases and inform practicable and workable public policy at local, state and federal level in ways which are knowledgeable and well informed, and avoid such economic and environmental harms, persistent angry backlash, legal proceedings, frustration, anger and bitterness with and loss of trust in a political order imposing itself on the district from outside; impacting without proper recourse.

Locating the Central Murray

Geography

The Riverina Bioregion encompassing the Central Murray Catchment of New South Wales is defined under the Biodiversity Conservation Act 2016, here including indicative Indigenous language and cultural areas, as follows:¹²



This vast bioregional expanse was formed over millions of years as a massive floodplain spilling off the highlands, slopes and hills to the east, and today ranks among the largest areas of flat country on the planet. Its topography is as illustrated by the relief map here below in relation to

¹²Government of New South Wales, *Biodiversity Conservation Act 2016 No 63*, <https://www.legislation.nsw.gov.au/#/view/act/2016/63>, accessed 22 June 2019.

¹³NSW Natural Resources Commission, *Riverina Bioregion Regional Forests Assessment: Riverina Redgums and Woodland Forests*, Supporting Map Book, December 2009, cached.

the Murray-Darling Basin as a whole, the main sites of present conflict over water, and the respective state capital cities of Adelaide, Melbourne, Sydney and Brisbane.



The geological peculiarity of New South Wales created what are today considered to be two separate, Northern and Southern Basins, integrated for administrative purposes into the one Murray-Darling Basin through their confluence at Wentworth in NSW and on into South Australia, which with its state capital Adelaide is the most singularly affected by upstream flood and drought events, where the other state capitals of Melbourne, Sydney and Brisbane are not located in the basin at all.

It may be argued that Adelaide is not in the basin either, except that during drought up to 90% of its metropolitan water supply is piped west from the Murray where it flows through the extreme southeast of the state, where important albeit declining rural service centres such as Deniliquin and Hay are not so peripheral to the Basin but very centrally located.

This absolute dependency of South Australia on the Murray Darling Basin for its fresh water supplies lies in direct competition with southern basin irrigators and environmental flows alike, is relevant to this thesis as will be discussed further below, considering that state borders were historically assigned by far away colonial administrators, giving rise in itself to much of the ongoing conflict over water allocations along the Southern Riverina.



The district in question is thus a central feature of the Southern Murray-Darling Basin forming the extended floodplain of the Goulburn and Campaspe Rivers in North-Central Victoria, and the Murray, Edward, Wakool Rivers, Billabong Creek, and Murrumbidgee and Lachlan Rivers in South-Central New South Wales.

A particular item in this paper was formed by a geological event some 60,000 years ago resulting in the Cadell Tilt, or Cadell Fault¹⁵, caused by earthquake activity creating an escarpment aligned north-south opposing natural stream flow along the then Murray River bed, which now forms Green Gully west through the town of Mathoura before extending as the land finds its original level back into what is now the Wakool River.

¹⁴ Murray-Darling Basin Authority, <https://www.mdba.gov.au/publications/products/murray-darling-basin-boundary-map>, accessed 24 June 2019 and cropped to fit.

¹⁵ A. McPherson, D. Clark, M. Cupper, C.D.N. Collins and G. Nelson. *The Cadell Fault: a record of long-term fault behaviour in south-eastern Australia*, Australian Regolith and Clays Conference, Mildura, 7-10 February 2012.

The event upset the natural broad floodplain regime and in doing so created the Edward and Wakool Rivers as an anabranch of the present-day Murray River, north then west again through where the town of Deniliquin is now located; fanning out the Murray River through the Barmah and Millewa Forests and diverting the Murray itself south to merge with the Goulburn River thence west again through Echuca.

A further characteristic of the region results from the grey swelling clays deposited across the flood plane over the millennia, which set hard when dry but are soft and malleable when wet, finally breaking down into fine silt in flood conditions. Water flowing across flat sheets does not run in straight lines but in slowly meandering rivulets which erode the hard clay river banks to form distinctive winding curves, and in time lunettes or billabongs whose water levels are maintained by the subsurface water table.



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The significance of this pattern of hard swelling clay erosion across the level floodplain is that while it creates fertile, nutrient rich sandy-loam deposits through seasonally flooded forests interspersed with open grassy savannah devolving finally into treeless plains, it also erodes the steep clay banks around curving streambeds, toppling trees and vegetation as it goes.¹⁷

The South Australia Lower Lakes district at the other extreme, for its part, was created in the coastal depression formed by elevation of the Mount Lofty Ranges, comparable with the Swan Coastal Plain in the southwest of Western Australia over probably the same geological period when the southern coastline broke off from the east coast of the present-day Indian Subcontinent, and likewise reduced gradually in size by formation of coastal sand dunes, leaving us with the actual mouth of the Murray River further to the northeast of the lakes at Wellington.

¹⁶ *Google Earth*, 35° 29' 42.96" S, 144° 53' 18.21" E, Elev. 10 Km, Image Date 10 August 2018, accessed 24 June 2019.

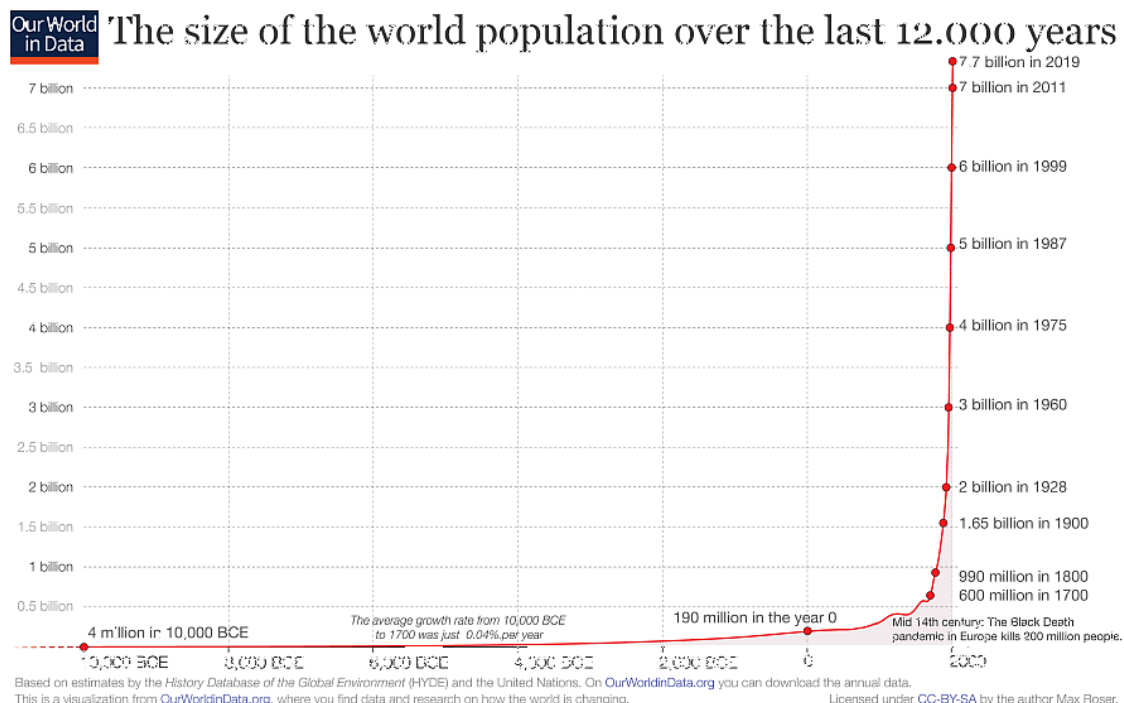
¹⁷ See also Butler, B. E.; Blackburn, G.; Bowler, J. M., Lawrence, C. R.; Newell, J. W. and Pels, S. *A Geomorphic Map of the Riverine Plain of South-eastern Australia*, Australian National University Press, 1973.

History

It is simply not reliable to interpret the history of the Southern Murray-Darling Basin as a linear singularity. It's precedents and execution are complex and varied over the many generations of real people involved. The initial NSW colony was established by Britain in response to the loss of the Americas resulting from the American Revolutionary War of 1775 to 1783, during the prime-ministership of Frederick, Lord North, during the reign of William III. The colony itself was established following the exploration of the east coast of Australia in 1770, and after a succession of prime ministers during the latter part of the American Revolution under William Pitt the Younger, who served from 1783 to 1801, and again from 1804 to 1806.

Originating substantially in the Seven Years War (French and Indian War) of 1755, triggered by Scots, Irish and North Country (Border Reivers) soldier-settlers moving out beyond the agreed lines of settlement to establish their own communities in defiance of treaties between Britain and France, the American Revolution set in train a series of further uprisings including the French Revolution from 1789 to 1799, and the failed Irish Rebellion of 1798.

The population timeline throughout this long period also reveals massive growth, leading to chronic urban overcrowding and scarce access to resources, creating pockets of extreme poverty and a huge rise in the number of criminal convictions which led in turn to overcrowding of prisons and at the time a more-or-less humane corrective solution of sentencing to transportation in the colonies. In the event, the loss of the American Colonies prompted Britain to find another place to which their convicts could be transported, in the hope they could make a better life for themselves than was available in England.



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The Southern Riverina district of NSW was not settled by contrast until some 50 years after the convict settlement at Sydney Cove, two full generations after, following the Battle of Trafalgar

¹⁸ Our World in Data, <https://ourworldindata.org/world-population-growth>, accessed 26 June 2019.

in 1807 and in consequence the defeat of Emperor Napoleon Bonaparte by the Duke of Wellington. Settlement of the Riverina took place not under King George III, but his sons George IV and William IV, and due course his granddaughter Victoria.

It needs to be added, and not only for emphasis, that this long period was administered not by the old Colonial Office which lost the Americas, but by the Secretary of State for War and the Colonies. The imperial culture had shifted markedly by that time, from reacting to substantial loss in the Americas, through the War of 1812 against France and the fledgling United States of America, to supreme naval command of the world's oceans.

It becomes plain that during that earlier period of convict transportation, bushrangers, pirates, whalers and sealers and others, the colonial administration was required to maintain a rule of frontier law and order enforced by a succession of British regiments alongside colonial and native police and the appointment of magistrates, all supported by the building of new barracks, court houses, and prisons throughout the settled districts and beyond, including a NSW outpost established 1825 at King Georges Sound in Western Australia to deal with pirates operating from the Recherche Archipelago.

The issue being addressed locally to that point had not been concerned with productive, free farmers but the need to restrict convict squatting out beyond the lines of location encompassing the 19 settled counties scattered around Sydney, within which free land grants had been more or less available, but anyway because the country had yet to be explored.

Later settlement of the Riverina by skilled farmers through claim of squatters rights inherent in English Land Law, as it turned out, was tolerated by the colonial administration for several reasons. In the first place, by the end of the long Napoleonic Wars Great Britain was heavily in debt, which grew from £261,735,059 in 1792 to £885,186,323 in 1815.¹⁹ While agricultural production commanded high prices because of incessant wars and blockades, to pay off the national debt taxes were crippling and small farmers with large families needed more land to work in order to survive.

Ongoing efforts by the NSW colonial administration to get the economy on a sound footing, on the other hand, saw revenues increase between 1831 and 1837 from £122,855 to £354,802, and exports from £324,168 to £760,054, which lead to moves by the colonial administration to help ease the plight and at once benefit from the productive hard work free farmers represented, in stark contrast with convicts and corrupt officers.

This extract from the Australian Dictionary of Biography entry on Governor Sir Richard Bourke is worth quoting in full, not least because it ties in his earlier experience as governor of Cape Colony in South Africa, and demonstrates that the problems of land administration here in the NSW colony were not peculiar to this place, as governments as they still do today borrow experience and precedent in common law from related jurisdictions, as follows:

Bourke's governorship was a period of active economic growth. Between 1831 and 1837 revenue increased from £122,855 to £354,802 and exports from £324,168 to £760,054. This growth began before Bourke arrived, but it was accelerated by his administration, especially of land. In 1831 land was sold only within certain

¹⁹ Lord Ernle, *English Farming Past and Present*, London: Heineman, 1961, p. 316.

boundaries, the so-called limits of location, but unauthorized squatting on unoccupied crown lands was becoming common. At the Cape Bourke had seen that large tracts were needed for raising stock in a dry climate, so he did not restrict squatting in New South Wales. But at the Cape he had also seen the crown's land rights overlooked, and much revenue lost by mere occupation. In New South Wales, therefore, after approval from London, an Act was passed in 1833 (4 Wm IV, no 10) empowering commissioners to prevent the crown's rights in occupied crown lands from falling into abeyance. In 1836, partly because wealthy occupants complained of depredations by poorer squatters, and partly because he thought additional powers of eviction were needed, the Crown Lands Occupation Act (7 Wm IV, no 4) was passed. It provided for annual occupation licences for depasturing stock on unsurveyed 'runs' beyond the limits of location, where commissioners of crown lands, also acting as magistrates, were to carry the rule of law.²⁰

Up to this time the colony of NSW based around Sydney was restricting settlement to what was known as the 19 Counties, in large part due to the expense of providing government services but primarily because of the ongoing corruption among public officers combined with widespread squatting by convict ticket-of-leave men beyond the reach of law and order.



²⁰ Hazel King, Bourke, Sir Richard (1777–1855), *Australian Dictionary of Biography*, National Centre of Biography, Australian National University, <http://adb.anu.edu.au/biography/bourke-sir-richard-1806/text2055>, published first in hardcopy 1966, accessed online 26 June 2019.

In 1926 Governor Ralph Darling, Sir Richard Bourke's predecessor, had defined the 19 Counties in accordance with orders from Lord Bathurst, British Secretary of State. He also initiated the construction of the Great North Road by convict labour, linking the Hawkesbury settlements around Sydney with those already established in the Hunter Valley. These 19 Counties became the limits of location in the colony, where only free settlers were permitted to take up land.

Under Darling, NSW's western boundary set in 1788 at 135° east longitude, was also extended west to 129° degrees east longitude which now forms the border between Western Australia and South Australia. Everything beyond Wilsons Promontory to the south then ceased to be under NSW control of New South Wales, with Van Diemen's Land proclaimed a separate colony 1825.

Another of Darling's achievements was his monetary and banking reform. At the time of his arrival the British Treasury decided to replace the American dollar currency used in NSW with British coin. As a result, dollar coins lost value so they were exported in large quantities, leaving the colony short of currency; creating a slump which combined with three years' drought caused considerable economic distress. This gave Darling an opportunity to enquire into the colony's banks and to introduce strict control before granting government loans.

Further enquiry into the civil service revealed that officials had been appropriating government funds for their own profit, resulting in orders from London that all public moneys were to be collected regularly and locked in a vault, leaving £10,000 maximum deposits in the two banks. Public accounts duly brought to order, colonial revenues doubled without imposing additional taxes, and became adequate for the entire costs of the civil government.²¹

Under Bourke's subsequent administration, in 1831 free land grants in the 19 Counties were abolished in favour of sale by public auction, raising further revenues and making it possible to assist passage of free farmers to further develop the colonial economy. In 1834 the surveyor-general Sir Thomas Mitchell finally produced a reliable map of the 19 Counties, and in 1835 the counties themselves were finally proclaimed.²²

From 1831 Bourke's policy of providing government-assisted immigration to skilled farmers was implemented, which continued through the early period until 1860, and again following land law reform from 1861 to 1900 in the lead-up to Federation, as follows:

Annual average assisted immigrants to Australia²³

Period	Australia	NSW	Vic	Qld	SA	Tas	WA
1831–1860	18,268	5,355	8,796	479	2,728	710	200
1861–1900	10,087	1,912	1,304	5,359	1,161	119	232
TOTAL	28,355	7,267	10,100	5,838	3,889	829	432

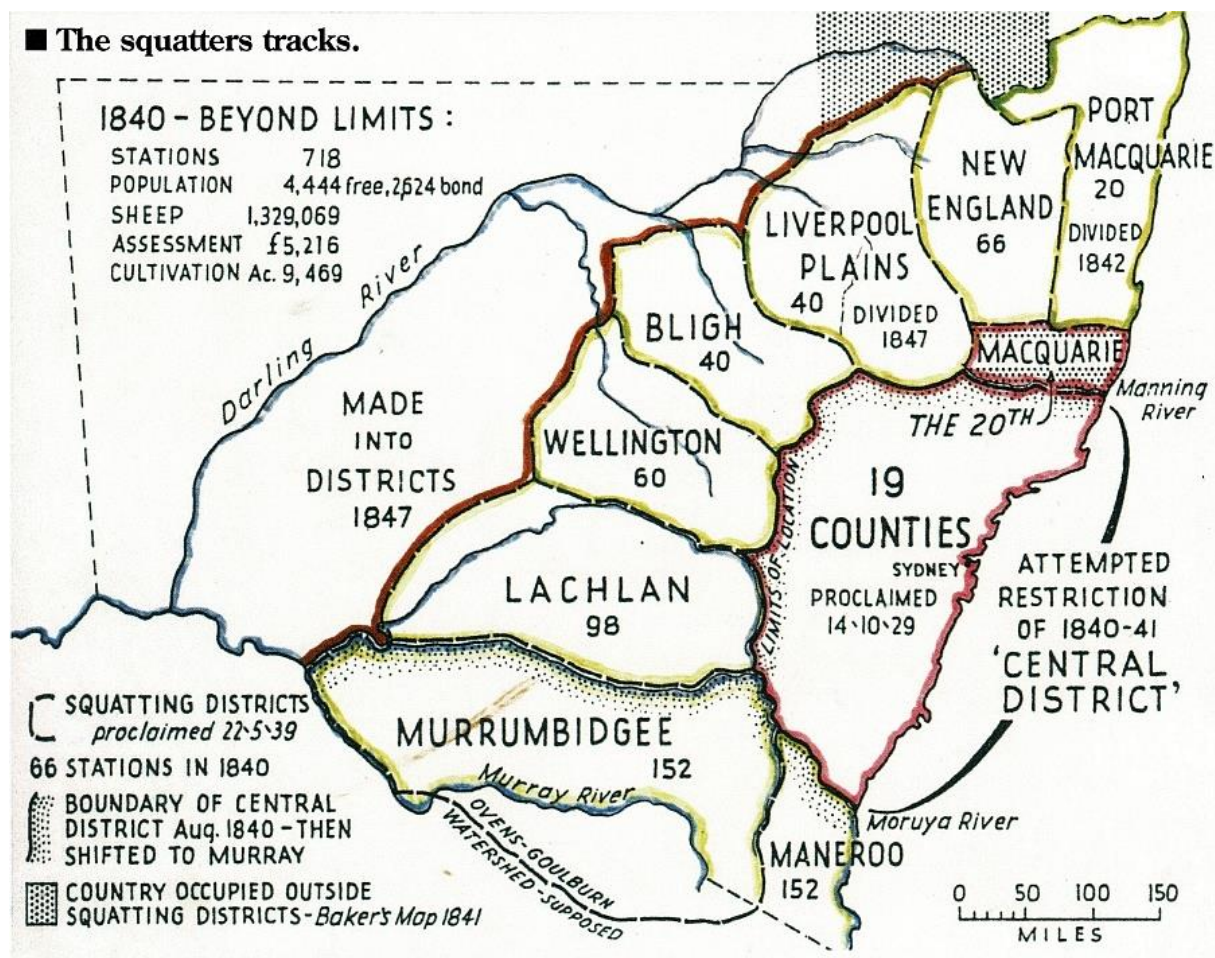
²¹ Darling, Sir Ralph (1772–1858), *Australian Dictionary of Biography*, National Centre of Biography, Australian National University, <http://adb.anu.edu.au/biography/darling-sir-ralph-1956/text2353>, published first in hardcopy 1966, accessed online 28 June 2019.

²² NSW Department of Finances, *History of Land and Property Information*, January 2013. ISSN 2201-1978, <https://www.nswlrs.com.au/getattachment/81ce69ef-58c3-42e8-9edb-3bebc00f35e6/attachment.aspx>, accessed 26 June 2019.

²³ Price, Charles. Chapter 1: Immigration and Ethnic Origin. In Wray Vamplew (ed.). *Australians: Historical Statistics*. Broadway, New South Wales, Australia: Fairfax, Syme & Weldon Associates, 1987, pp. 2–22.

Notice in particular the overwhelming numbers of immigrants assisted by government to settle remote districts during this mid-late period of colonial development in what is now Victoria, followed by New South Wales and South Australia, and later Queensland.

In 1836 the Squatting Act was further proclaimed, in 1840 establishing squatting districts along the Murray, Murrumbidgee and Lachlan Rivers, and along the Darling tributaries in the northern basin catchment, into which immigrant settlers quickly established themselves. Further districts extending out to the Darling River were added in 1847.



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Locating the Southern Riverina district historically, this period of extended settlement of the NSW colony and Australia as a whole is consistent not with the forced convict history of the eastern seaboard along the Pacific Coast on which Sydney was founded, Brisbane originating in the convict settlement on Moreton Bay in 1799, and Hobart as another example in 1803; but with this mid-period associated rather with the free, assisted settlement on the Swan River in 1829.

While there was a convict settlement on Port Phillip from 1802, Melbourne itself was not established until 1835, and finally Adelaide in 1836, under successive British prime-ministerships of Viscount Goderich, the Duke of Wellington, Earl Grey, Viscount Melbourne, Sir Robert Peel and Earl Russell. The first town in the Riverina was Moulamein established in 1841, and close behind it Deniliquin in 1843, Moama in 1851, and Hay in 1858.

²⁴ Kilpatrick, Mavis and Sinclair, Ruth, *Settling the Edward: Squatters, Surveyors and Selectors*, Deniliquin: Deniliquin Newspapers Ltd, 2004, p. 8.

The region as a whole was not explored until the expedition by Surveyor-General Sir Thomas Mitchell in 1836, attracting like Cook's maps of 1776 considerable interest among investors and free farmers who came in to settle not from the Pacific side, but avoiding difficult mountainous terrain up along the rivers and flat country from the south and west via the settlements around Port Phillip, and following Sturt's expedition of 1830, the Port Adelaide River district.

Philosophy

There are more parts to the complexity bearing on the Central Murray than historical periodicity, immigration patterns and legislative provisions. In resolving bitterly entrenched conflict arising from long term effects of colonisation and its consequences toward restoring regional prosperity and community vitality, it is more desirable to ease the resulting alienation and failure of communication, and restore good faith and respect for common concern among diverse sectional interests not always moderated through mere passage of time.

It is neither reasonable to assert an ideology of 'fairness', of 'sharing', among people already subscribing to enlightened law reform, land reform, universal adult suffrage, the abolition of slavery and the death penalty; of the extension of individual legal rights and the idea of social welfare as underpinning a healthy society.

In this matter, the Great Famine of Ireland in 1847 - the worst in a series of such famines dating from 1740 through crop failure in 1822, the Great Famine of 1847 and the last main famine of 1879 - combined in the persistent failure of revolutions across continental Europe peaking in 1848, saw ordinary people spilling out of Europe in shiploads.

By this time, Enlightenment thought nurtured in Geneva, Edinburgh, and the English Midlands in particular, were formulating more utilitarian, Anglo-American philosophies of law and with them new economic foundations. To contain this discussion, the ideas of Jeremy Bentham (1748-1832) as they contributed to law reform, advocated for individual economic freedom, separation of church and state, freedom of expression and abolition of slavery among other matters, bear far more relevance to the foundations of Australia as a nation than the later social theories of Karl Marx (1818-1883) and Max Weber (1864-1920).

It is cheap wisdom to re-interpret conditions in the Australian colonies in retrospect, borrowing theory and ideology produced later, not earlier. It remains doubtful that colonists and settlers arriving in NSW during that early period had ever heard of such ideas as social class, or in that matter spoke or were able or indeed interested in translating sociological arguments arising from the turmoil of continental Europe, when parallel moves had already been underway in English common law supporting democratically-elected parliaments.

It cannot be said either that Australia was populated by an inherent 'working class' when the construct was imposed much later, and then in retrospect; borrowing not from Enlightenment values of freedom and hard work but subsequent interpretive social theory as justification for strike action against perceived injustice. After the early attempt at transportation to resolve the critical social and economic issues arising from massive, unplanned and unprepared population growth, the Australian colonies were peopled like North America by immigrant farmers looking for more land on which to raise their families.

Locating political foundations of the Central Murray in Enlightenment philosophy promoted by law reform advocates such as Jeremy Bentham and John Stuart Mill, pursued here by practical post-Napoleonic reformers like Sir John Robertson seeking to ease the condition of people, thus contrasts with subsequent introduction of continental sociological theory devised by Marxist and Weberian intellectuals later adopted in Australia by left-wing cognoscenti, tenured academics and trades union aficionados.

As we regard the differences between enlightened political reform and abstract sociological theory, it becomes difficult to read the latter as inherently more progressive merely due to its later emergence following persistent failure of political revolution across continental Europe - which collapsed again anyway in the Great War of 1914-1918, then again in the 2nd War of 1939-1945 - just more abstract, more obtuse, impracticable.

Ongoing political differences and the conflicts they generate between Labor's much-touted 'progressive', historical materialist sociological theories and the liberal, fair-dealing outlook, cannot reasonably be interpreted either as binary oppositions; as simplistic public/private dichotomies.

Differences arise from disparate cultural, philosophical and intellectual traditions; diverse sets of ideas, reflecting the old feudal conservatism of continental Europe, persistent notions of the divine right of kings and infallibility of Popes confronted by an agony of 19th century radicalism and its many discontents, against the simple freedom of ordinary people to think and act on their own behalf.

The state and federal electorates of Murray, Riverina and Farrer have thus almost always been held by old Country Party or Liberal Party members, apart from periodic Labor incursions by Irish Catholic publicans like John Donovan, and media personalities like Al Grassby.

Politics

It is worth noting here that in the aftermath of the defeat of Napoleon 1815, failure of the Irish potato crop in 1822 triggered agrarian uprising across the south of Ireland, leading to a British Army of Occupation during the mid-1820s. Due to policy of quelling discontent and providing paid wages to disaffected farmers and farm workers by pressing them into army service, by the time the regiments departed the ranks comprised up to 60% Irish.

On the surface of things, one might construe a distinction here between the British on the one hand, and Irish on another, except that, according to Foster, "on so small an island [as Ireland], an Irishman would be an Irishman: yet it is not so."²⁵ Dispensing with the sectarian question before we proceed, as in Western Australia and indeed all parts of the British Empire including the Americas, the community in question arises from Scots and Irish stock as much as English, and Welsh, Cornish, Dutch, Chinese, Italian, German, among many others.²⁶

Differences as they developed over the long period since colonisation have been constructed primarily in support of the union movement rather along class lines. As a result, what we have entrenched among the imagined political oppositions are a wealthy squattocracy on the one hand,

²⁵ Crèvecoeur, in R.F. Foster, *Modern Ireland: 1600-1972*, London: Penguin, p.197.

²⁶ Hardwick, Gil, *The Hidden Irish of the Lower South West. 11th Irish-Australian Conference*, Murdoch University, 25-30 April 2000, Panel C: Anthropology and Sociology, 11.00 am, Friday 28 April.

and a wage-dependent working class on the other; both mediated by the emergence over time of a free and independent, prosperous, self-financing middle class.²⁷

Perusal of records of births, deaths and marriages on the other hand, reveals that from at least the mid-late 19th century the significant numbers of people involved, as in Ireland and other parts of the empire, were substantially related to one another through marriage and family rather than forming clear ideological blocks predicated upon theories of wealth and wage dependency.

During the early period through to the present time, convicts, itinerants, bushrangers, displaced Aboriginal peoples and the rest of the fallout from prolonged war and economic depression tended instead to form an underclass throughout the bush, and at once in what became slums around city centres.

The remaining cohorts needing to be taken into account are, from the very earliest years of settlement, military officers and their ranks, public officers and their servants, and much later toward the opening years of the 21st century, ideas of an established political class bringing with it a privileged access to party preselection and consequent election to our parliaments.

In examining the complex web of inter-relationships and their inherent conflicts, all these need to be taken into account. It is not the purpose of this paper to extol the history of trade unionism, and neither to romanticise some imagined, jingoistic history of squatters in Australia; rather to examine persistent and ongoing political conflict toward its amelioration in public discourse, and not least contribute to sustained review of public policy impacting on districts located at considerable distance from established centres of power.

Regardless of these ongoing ideological arguments, the reality of Australian history has far less to do with political differences than with simple population growth presenting as world population growth spilling over onto this continent as it does everywhere else on the planet, impacting successively over the long period on everybody, regardless of station in life.

It is reasonable to argue that as the Indigenous peoples were impacted upon and often devastated by the influx of Europeans and others either transported here due to wars and revolutions around the other side of the planet, assisted to migrate here, or coming anyway of their own volition, so in due course were everybody else.

Political divisions continue regardless, explained away by obtuse reference to singular and specific historical events in ongoing battle for something else called 'equality', by abstracting the people involved into adversarial counter-positions over wage claims, economic protection, and response to drought and natural disaster among other issues.

The simple reality is that people continued to flood into the country, as they did into the New World as well as the broad Antipodes, forced by ongoing conditions in a collapsing Europe.

The problem for the Australian colonies as elsewhere - commonplace understanding among old settler families throughout inland Australia - was that by then the land had been 'taken up'. Difficulty only partly arises from the size of old squatter blocks, simply because the plantation economy was until that time the primary economic model driving civilised Europe, and land

²⁷ Lee, Jennifer, *A Black Past, A Black Prospect: Squatting in Western New South Wales 1879-1902*, Thesis submitted in fulfillment of the requirements for the degree of Master of Arts, Australian National University, August 1980. <https://core.ac.uk/download/pdf/156720446.pdf>, accessed 22 June 2019.

reform was in any event already underway.²⁸ The remainder aside from continuing migration was large families; a farm may well support a family, but only temporarily, since as children grow up and marry, have children of their own, more land is required to keep them all.

The English reforms themselves arose originally from the Glorious Revolution of 1688, a whole century before the First Fleet entered Sydney Harbour, not the American or French Revolutions of the late 18th century on the one hand, nor the continental intellectual movements of the late 19th century on the other, still today far in advance of continental law and land reform.

In the Australian colonies, increasing population prompted legislative action to implement the reforms underway throughout the British colonies; in the event primarily by land reformer and politician Sir John Robertson (1816-1881).²⁹ Robertson was elected to the NSW parliament in 1856 and promptly appointed Secretary for Lands and Works. In 1861 he saw his Crown Lands Alienation Act and Crown Lands Occupation Act pass into law, clarifying land tenure in the Australian colonies and setting precedent underpinning Australian land law to this day.

In a nutshell, the old plantation economic model predicated in the New World by the Spanish Hacienda model was being superseded by the liberal economic model relying on utilitarian ideas of the greater happiness for the greater number of people, and with it an opportunity for people to prosper by their own hard work; that is, the best option in the circumstances for ensuring the best outcomes for the most people, where under the old regime the most people were becoming destitute.

In the fledgling United States of America, parallel debate on President Abraham Lincoln's Homestead Act in the same year saw the southern states long dependent on the old plantations worked by slave (forced) labour, quit congress to form their own confederacy, and Lincoln's Act passed in 1862 simply because those opposing had walked out.

Had human population remained stable over the long period, the political contingencies in land and later water reform may not have been warranted, but the immigrants still flooding in from war-torn Europe created such demand for resources that legislative reform and with it civil war between the American states on the issue became inevitable.

It is a widespread understanding that the American Civil War (The War Between the States) of 1861-1865 was about freeing slaves, and that may have been the case in part since labour reform was underway anyway by then, but that fails to explain why the Confederacy went to war with the North on the issue while in Australia the same reforms passed into law relatively peaceably.

This writer holds that the American Civil War was not about ending slavery, but land reform and the prospect of breaking up the huge southern plantations in favour of smaller farms worked by free men. Such was demand, however, that even the defeated southern states were insufficient to satisfy the hunger for new farmland, and after the end of the war those immigrant cohorts rapidly expanded westward into what became the American Midwest in particular.

²⁸ For a far more detailed scholarly overview especially covering the American colonies and their antecedents, see Wiles, P. J. D., *Economic Institutions Compared*, Basil Blackwell, 1977, *passim*.

²⁹ Bede Nairn, Robertson, Sir John (1816–1891), *Australian Dictionary of Biography*, National Centre of Biography, Australian National University, <http://adb.anu.edu.au/biography/robertson-sir-john-4490/text7337>, published first in hardcopy 1976, accessed online 18 June 2019.

The effect of the anomaly was to create an administrative pocket substantially out of sight from Sydney but well within the purview of Victoria, populated from Victoria and to a lesser extent South Australia, oriented socio-economically toward Victoria but outside their jurisdiction, with indicative of social collapse some 200 NSW police currently stationed in Deniliquin, for a total population in the local government area of less than 9,000.

More conveniently, since the LGA boundary is already in place, a new state border embracing the Little Murray subregion may be warranted along the southern boundary of the present-day Edward River LGA, through Moulamein to reconnect finally with the existing border at Kenley back on the Murray, except that would divide the old Wakool Shire, which might merge into the Murray River and Balranald LGAs.

There are two factors in play here. First, the apparently arbitrary decision by explorer Charles Sturt during his expedition of 1829-30 to turn left at the Cadell Fault junction in the Barmah-Millewa Forest rather than right, in the event mapping the southern channel through the Barmah Choke as the Murray, which tends during flood to seek its ancient stream bed and spill over into the lower-lying Wakool River,³² when the northern flow is along what became known as the Kyalite River or Edward River, and by the local people Kolety, but which might have been named as the Murray, and the southern channel after some other colonial official entirely.

Second, in determining the state border, based on the maps they had available at the time, the colonial administration based in Sydney "had the big say"³³ on where their state border with the new colony of Victoria was to be located, and simply decided it was to be the Murray. An old family story has it that the 20-member NSW delegation got the sole Victorian emissary drunk, and that was the end of the matter. My guess is NSW simply wanted the extra tax revenues.

To make matters worse, the primary rural service centre of Deniliquin detached from the district and in 1858 gazetted a separate municipality all of about 10-15 miles square. The exercise is worthwhile in exposing the often arbitrary manner in which key decisions are made by remote, administrators on the recommendation of some locally interested party, and their impacts on surrounding districts to whom such decisions make no sense whatsoever but which they must live with, especially in such close proximity to state borders.

Growing up in Deniliquin, this writer is acutely aware of the strategic burden on the place, still oriented socially and economically toward North-Central Victoria, in having to go to Melbourne when we had trouble with Sydney, Sydney when we had trouble with Melbourne, Canberra to resolve conflict both ways; buffered and at once hidden, isolated, insulated, by large outlying urban centres of Bendigo, Shepparton, Albury-Wodonga, Wagga Wagga and Bathurst-Orange which soak up regional development policy regardless.

It is ironic perhaps, that in the course of events, under their *Irrigation Act 1886*, "Victoria was the first common law jurisdiction in the world to declare water use rights to be state property." The *Irrigation Act 1886* provided: "The right to the use of all water at any time in any . . . water-course shall . . . be deemed to be vested in the Crown." Alfred Deakin, Minister of Water Supply and sponsor of the bill, declared that this provision was designed to prevent riparian owners from

³² Ecological Associates, *Why does the Murray River shrink downstream of Echuca?* 5 March 2018, <https://www.eassoc.com.au/why-does-the-murray-shrink-downstream-of-echuca/>, accessed 29 June 2019.

³³ Bill Gammage, ANU, *personal communication*, 2 July 2019.

interfering with an upstream diverter's statutory or licensed right to divert by insisting on the common law right to natural flow."

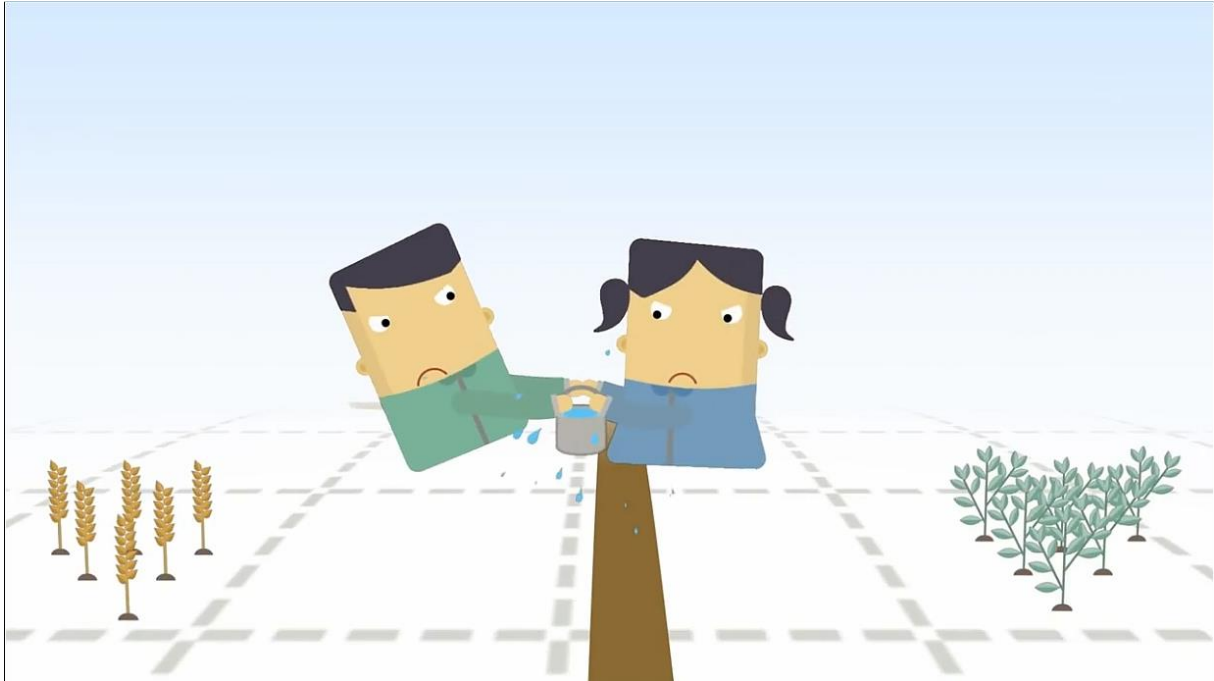
Approaching Federation, 10 years later New South Wales established a water diversion licensing system after the Victorian experiment, in their *Water Rights Act 1896*.³⁴

³⁴ Davis, P. N., Nationalization of Water Use Rights by the Australian States, *The University of Queensland Law Review*, Vol. 9, No. 1, pp. 1-2.

Human Dynamics

Confrontation

Transitioning from a discourse on historical oppositions which confuse and distract attention away from common cause in dealing routinely with floods and drought, bushfires, rabbit plagues, parasites and disease, low commodity prices, loss of export markets, not enough water, unresponsive agency policy, alienation and depression, the reality is that everybody is affected.



In this context especially, propaganda released in 2013 by MDBA Media, the publicity wing of the Murray Darling Basin Authority, needs to be re-examined. This media depicts two irritable school children fighting selfishly over a bucket of water, admonishing us like children that water "needs to be shared"; that "we need to look beyond our own backyard and share water fairly", "encouraging everyone to think about ways to manage water, such as improving water efficiency on farms, and finding better ways to deliver water to the environment".

This media was released under former school debating champion, political staffer and union organiser Tony Burke, member for the inner Sydney electorate of Watson, who was appointed to the federal cabinet in 2010 as Minister for Sustainability, Environment, Water and Population in the 2nd Rudd government, on a primary agenda of 'big country' population growth.

What MDBA Media failed to mention on YouTube is that since the first meetings to discuss construction of the Snowy Mountains Scheme, Australia's population increased after the Second War from 7.46 million people to 24.19 million people 70 years later in 2016. Over about the same period far downstream, Adelaide grew from around 430,000 people in 1950 to 1.3 million in 2015. Here it is not 'environmental flows' but so much extra water delivered overwhelmingly to the state of South Australia.

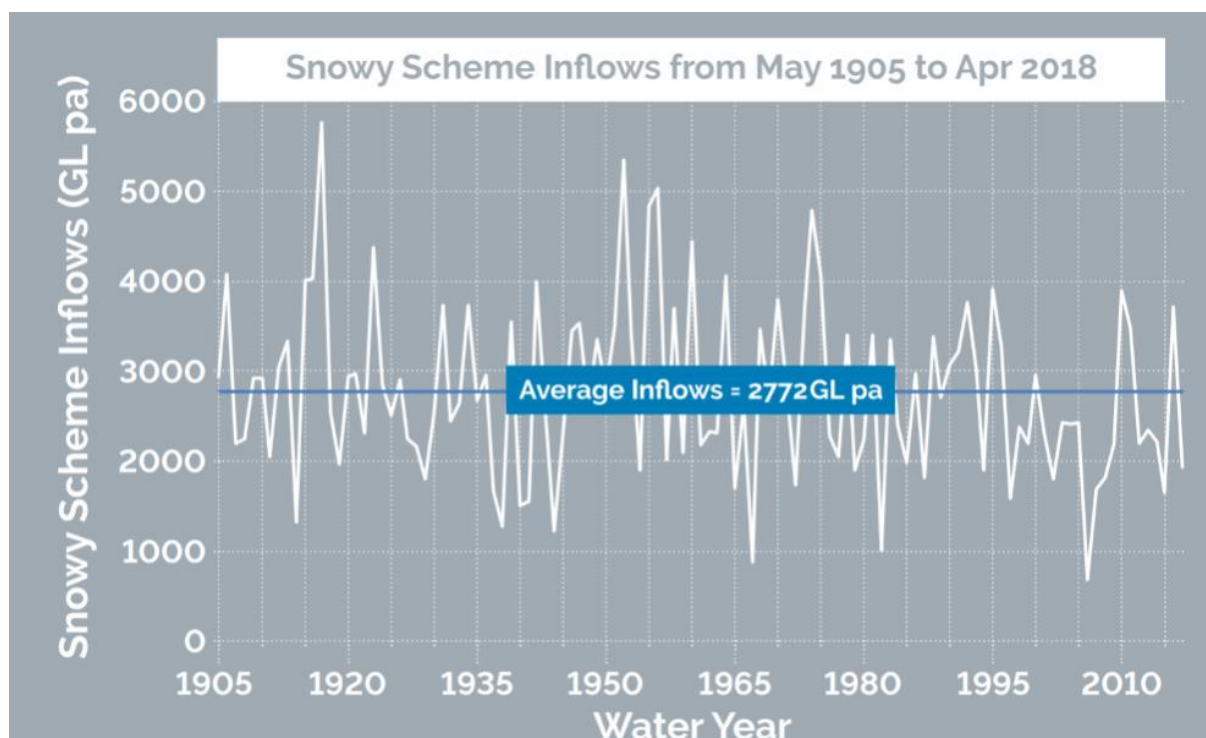
³⁵ MDBA, *Balancing the Basin's Water*, July 2013, <https://www.youtube.com/watch?v=LGSEAAkKR2g>, accessed 28 June 2019

MDBA Media further failed to mention that over the same period Snowy Hydro report declining average inflows on the upper Murray, Murrumbidgee and Lachlan Catchments, as follows:

The Snowy Scheme was designed to cope with large variability in inflows. In the last 110 years of data, inflows have ranged from 683 gigalitres (GL) seen in 2006/07 during the worst drought on record, to 5761GL almost a century ago in 1917. The long term average is just below 2800GL.

The total volume in Snowy Scheme storages is massive and it would take a number of consecutive years of above average inflows to return our total storage volumes, particularly Lake Eucumbene, to above average levels.

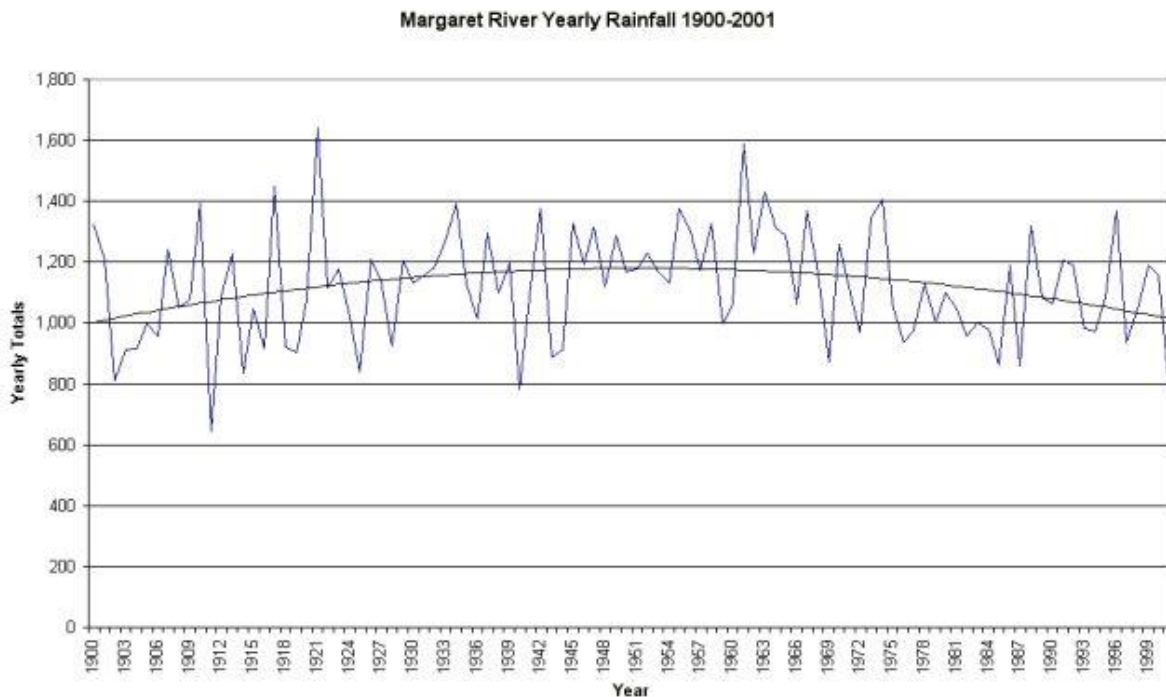
We can expect to receive around 50% of our inflows from snowmelt and rain during spring, so a bad snow season can have a significant impact on the total inflows for the year.³⁶



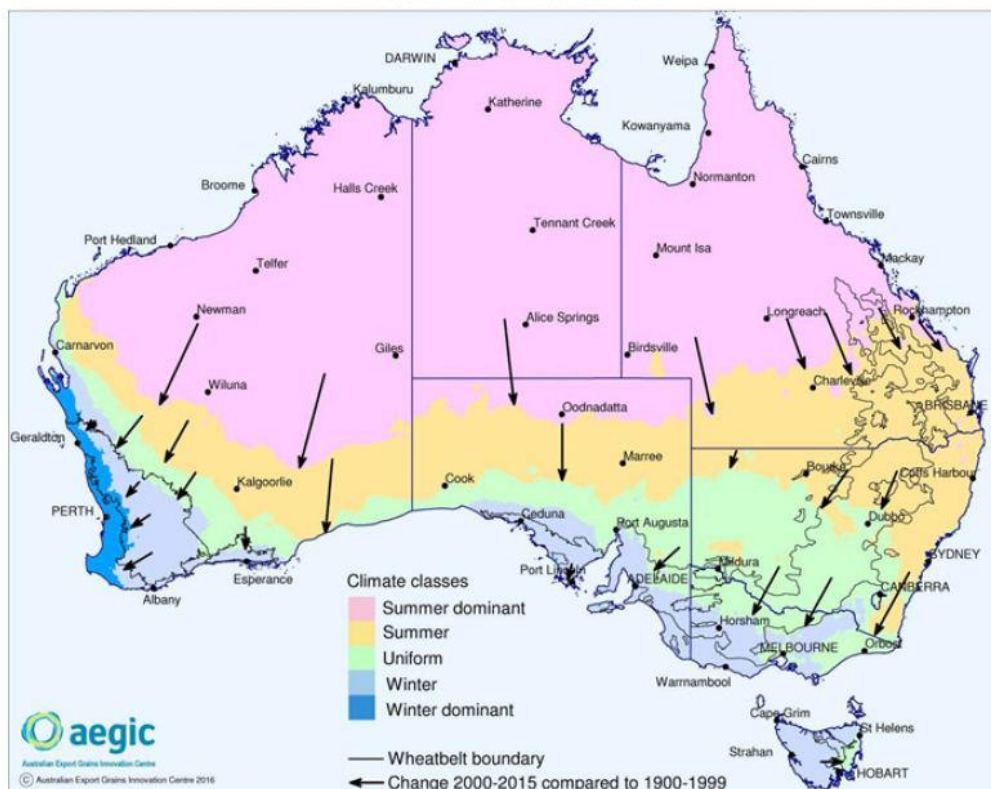
Given that these reports are presented in historical averages, and not disputing their report on current storage levels, issues with water availability are not related to over-extraction but to reduced inflows. It remains to be seen what effect exceptionally high inflows in 1917 breaking the Great War Drought, combined with mid-century highs from the early 1950s following the 2nd War Drought of 1937-1945, had on the early 20th century average, compared with the low inflows in 2006 for example, during the Millennial Drought of 1998-2008.

Weather patterns and climate variability is consistent across the southern coastline of Australia; plotting a polynomial trend line in place of a flat average shows cyclic variability (kurtosis) in play over the interpretation of climate change (skew), as in the rainfall graph for the Margaret River Station 009574 in the Southwest of Western Australia, plotted by the author in 2001.

³⁶ CSIRO, *Snowy Scheme Inflows*, <https://www.snowyhydro.com.au/our-energy/water/inflows/>, accessed 7 July 2019.



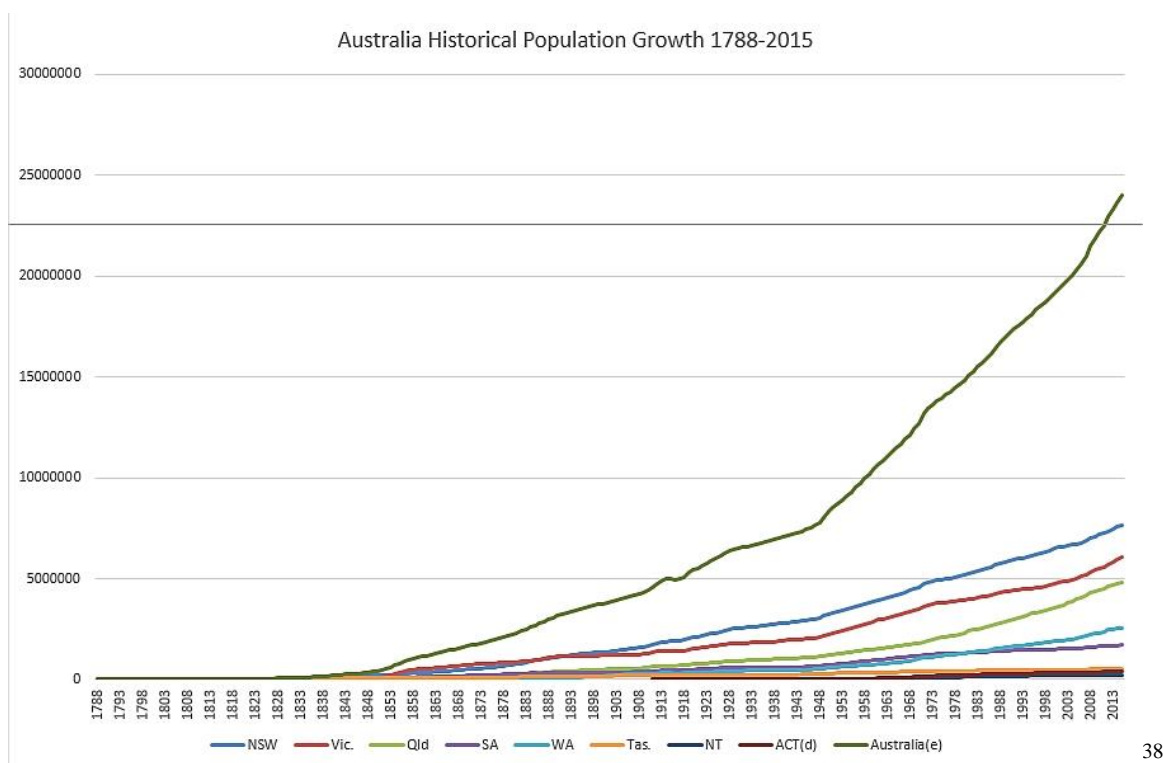
Whatever the cause, continental rainfall patterns have shifted south over the past 15-20 years recording lower average rainfall, but greater benefit through more uniform distribution of rain through the influence of the summer monsoon. In the southwest of Western Australia now, coastal and metropolitan wetlands are full during the whole year, not only in winter.



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³⁷ ABC, <https://www.abc.net.au/news/2016-02-25/australian-rainfall-zones/7200050>, accessed 10 July 2019.

Human population growth in the meantime has been exponential:



The CSIRO report of February 2006, commissioned by the Murray-Darling Basin Commission on risks to shared water resources of the Basin, assesses risk factors from climate change, afforestation, groundwater extraction, irrigation, farm dams and bushfires, without bothering to include human population growth as correlative risk, or plot reduced supply from declining inputs against such rapidly increasing human demand.

Their report argues that of "a sustained and statistically unambiguous increase in mean temperatures across the Basin . . . has been at the rate of 0.17° C per decade since 1950, with a tendency toward 0.2° C in the northern part of the Basin and 0.1° C in the southeast." The report cites Hennessy and others³⁹ on increase in frequency of extremely high temperatures since 1957, estimating the cumulative risks likely to affect Murray River flows by 2020 at around 5-6%.⁴⁰

Australian Bureau of Statistics data reveal that over much the same time period Australia's population rose from 8.18 million in 1950 to 24.19 million in 2016, while again Adelaide grew from around 430,000 people in 1950 to 1.3 million in 2015, around 300% either way. By 2018, moreover, 7.34 million people were born overseas, around 30% of some 25 million people now living in Australia on account of successive 'populate or perish' immigration policies since the end of World War II.

³⁸ Australian Bureau of Statistics, 3105.0.65.001 - Australian Historical Population Statistics, 2016. <https://www.abs.gov.au/AUSSTATS/abs@.nsf/mf/3105.0.65.001>, accessed 26 June 2019.

³⁹ Hennessy, K., P. Whetton, I. Smith, J. Bathols, M. Hutchinson and J. Sharples (2003). *The impact of climate change on snow conditions in mainland Australia*. CSIRO Consultancy Report, 47pp. accessed 29 June 2019.

⁴⁰ CSIRO, *Risks to the Shared Water Resources of the Murray-Darling Basin*, CSIRO National Research Flagships: Water for a Healthy Country Series, MDBC Publication 22/06, February 2006, <http://www.clw.csiro.au/publications/waterforahealthycountry/2006/RisksSharedWaterResources.pdf>, accessed 29 June 2019.

Neither does the subsequent 2012 CSIRO assessment of the ecological and economic benefits of environmental water in the Murray–Darling Basin include very large scale population growth impacting on the Basin,⁴¹ but relies heavily on Goyder Institute for Water Research analysis in partnership with then South Australian Labor government, CSIRO itself, Flinders University, the University of Adelaide and the University of South Australia;⁴² privileging South Australia as final end-consumers of Murray-Darling water.

As we proceed back through the requisite legislation in the *Commonwealth Water Act 2007* establishing the Murray Darling Authority, the Act itself arising from the work of the original Murray-Darling Basin Commission carries a Date of Assent at 3 September 2007, in the dying weeks of the Liberal-National Coalition under John Howard. In December 2008 under the new Rudd Labor government the *Water Act 2007* was amended to transfer the functions of the Murray-Darling Basin Commission to a newly-formed Murray-Darling Basin Authority, creating a single body responsible for water resource planning throughout the entire Basin.

From September 2007, the Act was superseded 23 times in 11 years; 11 times under Labor in July 2008, December 2008, August 2009, March 2010, January 2011, March 2011, August 2011, February 2012, November 2011, March 2013, May 2013, and 12 more times under the Liberal-National Coalition in January 2014, June 2014, July 2014, October 2014, April 2015, June 2015, February 2016, April 2016, May 2016, May 2017, July 2018, and December 2018.⁴³

During that same period, in 2007 Labor was ousted by Country Liberal Party in the Northern Territory, to be restored to power in 2016; in 2011 the LNP replaced Labor in Queensland; in 2014 Labor replaced the L-NP Coalition in Victoria; in 2015 Labor was restored in Queensland; in 2017 Labor replaced the Barnett L-NP government in Western Australia, in 2018 the Liberal Party replaced Labor in South Australia, while Australia had six prime ministers.

Until the federal election of May 2019, nobody was bothering routinely to consult the people living and working along the Central Murray on these critical issues bearing unrelentingly down on them. Instead the region has been subjected to a relentless salvo of scientific papers, all proposing solutions without ever simply back-tracking, coming back down to earth.

Whether the constant bickering and blaming is over environmental flows to the Lower Lakes, remedies for old problems South Australia has with its Goolwa barrages, rice along the Central Murray, cotton up on Cubbie Station or nuts on the Murrumbidgee, is less relevant to this thesis than the persistent conflict over how Basin water is to be allocated.

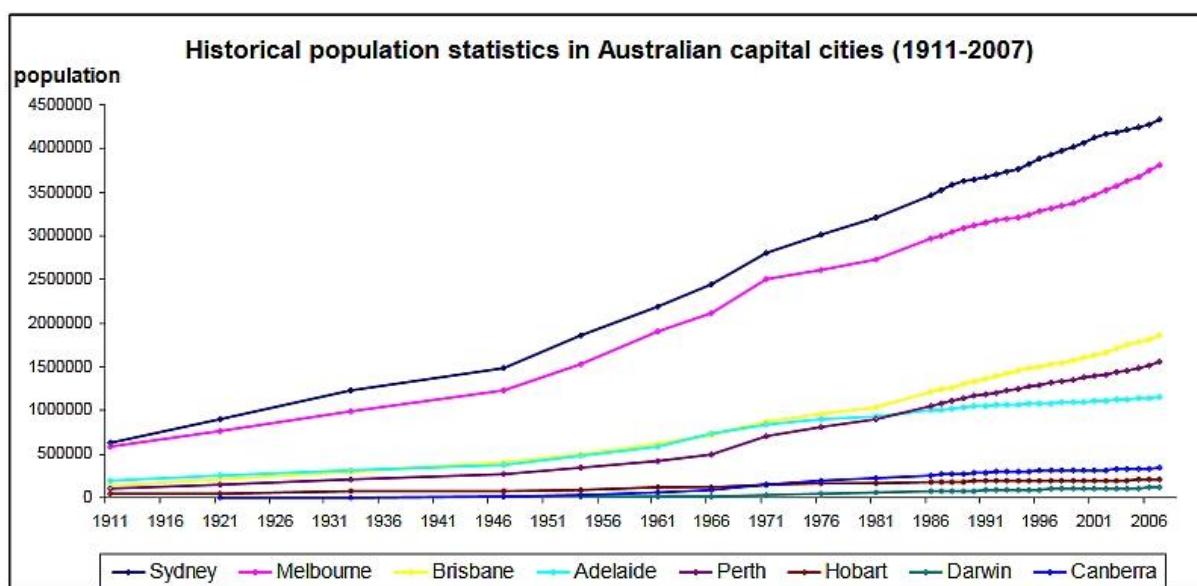
Science itself is not all that difficult. Research method is not so hard to practice, community participation not so hard to organise, tests and surveys not so hard to standardise, data not so hard to validate; working farmers not so ill-informed, so environmentally unaware, that such a valuable and broadly-based resource cannot have been accessed by now.

⁴¹ CSIRO, *Assessment of the ecological and economic benefits of environmental water in the Murray–Darling Basin*, CSIRO National Research Flagships: Water for a Healthy Country Series, 2012.

⁴² Connor, J.D., Banerjee, O., Kandulu, J., Bark, R., Hand King, D., *Socioeconomic Implications of the Guide to the proposed Basin Plan – methods and results overview*. Goyder Institute for Water Research Technical Report Series No. 11/3, Adelaide, 2011, http://www.goyderinstitute.org/_r77/media/system/attrib/file/68/MDBPSR-socioeconomic-methods.pdf, accessed 29 June 2019.

⁴³ Australian Government, Federal Register of Legislation, Series C2007A00137, *Water Act 2007*, <https://www.legislation.gov.au/Series/C2007A00137>, accessed 29 June 2019.

What becomes further clear is that during the long post-war period into the present, while the Snowy Mountains Scheme specifically to provide irrigation water across the southern Basin was completed in 1974, over the 45 years since Australian population has concentrated in the capital cities without correlative infrastructure developed to provide for them over the longer term.



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Fundamental questions need to be raised in these circumstances on the reasons for the ongoing political instability and with it the fusillade of agency reports under successive regimes desperate to establish authority over irrigators and water users throughout the Basin. The issues needing to be addressed in managing conflict over water access have more to do with simple disconnect, with alienation from the land and with it undue reliance on and partisan brokering of access to 'experts' to inform decision-making in remote capitals.

We know already that rural decline is positively correlated with environmental degradation; humans as a species, already in rampancy, impacting and suffering the same effects of over-exploitation and neglect as any other. Farmers, like catchments, simply cannot be wrung dry.

This phenomenon is especially clear in correlative growth between 1988 and 2018 in the numbers of graduate political staffers, union officials and lawyers on the Labor side being preselected and winning seats in parliament, in contrast with the political staffers, lawyers, banking and finance among the liberals. Over the same period the Nationals preselected fewer farmers and more members with small business, banking and finance backgrounds.⁴⁵

Decisions significantly impacting on rural communities are being made on ideological grounds pursued through complex legislation, persistent reference to tenured scientific staff embedded in partisan agency structures reminiscent of Solzhenitsyn's *First Circle*, media frenzy, and outside regular election campaigning little or no consultation with affected communities.

The salvo of propaganda appearing in *The Conversation* during the week of 30 April to 3 May 2012 during the late Gillard administration is of special interest, written by commentators funded

⁴⁴ ABS, 3105.0.53.001 – Australian historical population statistics, 2008.

⁴⁵ *Sydney Morning Herald*, 19 January 2019, <https://www.smh.com.au/politics/federal/parliament-is-no-more-diverse-now-than-it-was-in-1988-as-political-staffer-ranks-explode-20190116-p50rol.html>, accessed 3 July 2019.

by the Murray-Darling Basin Authority insisting somewhat pathetically that regulating the flow of water in the Murray-Darling Basin is more complicated than it looks.⁴⁶ The series goes on to explain "why we will keep making mistakes, and why that's OK".⁴⁷

Except, from real-life experience of living on the Basin for 180 years, it's not so complicated; mistakes of such vast magnitude are calamitous. Conflict over water is not endemic to the Southern Basin, but to political division in the capital cities; the media and the academy.

Following in the same series, *The Conversation* then published two articles together on the Coorong in South Australia in particular, both at the same time on the same day. The first laments "the human experience of environmental catastrophe in the Lower Lakes", while the other insists that while "Coorong recovery begins there is still room for improvement."⁴⁸

Current MDBA CEO Phillip Glyde still today, when he commands 280 staff with access to finely detailed intelligence on the Basin in its entirety; insists they "really struggle" with the ways communities are affected by the Basin Plan.⁴⁹

Since its inception the Authority has failed to carry out proper anthropological studies in its area of responsibility, failed to gather the most rudimentary feedback and intelligence on its impacts and effects, and conspicuously failed to act with the authority it is charged to do. Even the most casual ethnographer will want to know what the heck is going on.

Research ethics aside, the job of assessing social and environmental impacts is not difficult, not least in applying the same field rigor among the humans being impacted as among the flora and fauna, the fishes, amphibians, crustaceans and plant species of such ostensible concern to the activists and environmentalists.

Consequences

Regardless of whether we are facing climate change or cyclic fluctuation, who happens to be receiving MDBA funding or advising ministers, or what might be causing predicted shifts in our climate and weather, the Southern Murray Catchment and the Basin as a whole have always been drought and flood prone.

At Deniliquin weather station 074128, records date from 1858 with temperature varying from a record low of -6.1°C on 7 July 1939, and a hottest recorded day of 49.6°C (121.28°F) on 12 January 1878. The town's highest rainfall was recorded at 153.4 mm on 16 March 1878 on an average 28-40 mm rainfall a month over the long period.⁵⁰

⁴⁶ Lawler, Susan, Regulating the flow is more complicated than it looks, *The Conversation*, 1 May 2012. <https://theconversation.com/regulating-the-flow-is-more-complicated-than-it-looks-6350>, accessed 5 July 2019.

⁴⁷ Humphreys, Paul, Why we will make mistakes managing the Murray-Darling, and why that's OK, *The Conversation*, 2 May 2012. <https://theconversation.com/why-we-will-make-mistakes-managing-the-murray-darling-and-why-thats-ok-5808>, accessed 5 July 2019.

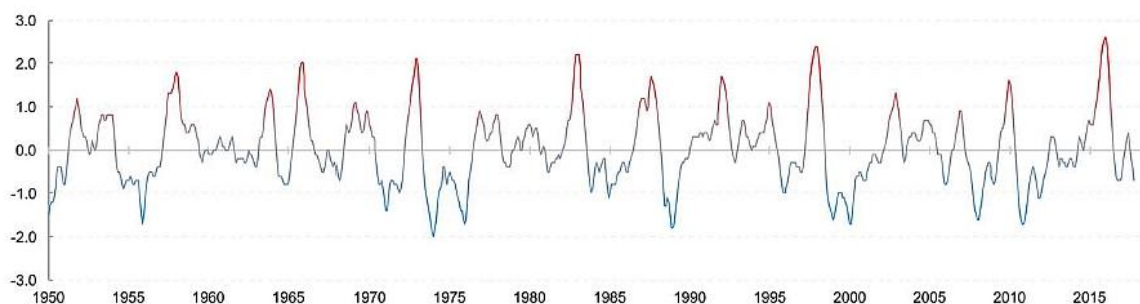
⁴⁸ Sobels, Jonathon, Living in the lower lakes: a human experience of environmental catastrophe, *The Conversation*, <https://theconversation.com/living-in-the-lower-lakes-a-human-experience-of-environmental-catastrophe-6064>, accessed 5 July 2019; Lester, Rebecca, Coorong recovery begins, but still room for improvement, *The Conversation*, 3 May 2012, <https://theconversation.com/coorong-recovery-begins-but-still-room-for-improvement-5810>, accessed 5 July 2012.

⁴⁹ Glyde, Phillip, interview with Warwick Long, *Victorian Country Hour*, ABC, 3 Jul 2019, 12:00pm, <https://www.abc.net.au/radio/programs/vic-country-hour/phillip-glyde/11274880>, accessed 3 July 2019.

⁵⁰ Australian Bureau of Meteorology, <http://www.bom.gov.au/climate/data/>, accessed 29 June 2019.

For comparison, the Bureau of Meteorology reports 11 negative Indian Ocean Dipole phases giving increased chance of rain over Southern Australia, in 1960, 1964, 1974, 1981, 1989, 1992, 1996, 1998, 2010, 2014 and 2016, while 10 positive IOD dry phases occurred in 1961, 1963, 1972, 1982, 1983, 1994, 1997, 2006, 2012 and 2015. The remaining intermediary IOD phases were neutral.⁵¹

El Niño–Southern Oscillation forecasts are also well understood in Australian agriculture and have been for some time.⁵² The Five-Year Oceanic Niño Index for December–February 1950 to September–November 2017 gives us regular cyclic oscillations over roughly the same period 1950 to 2019 in the range -2.0°C to 2.5°C , as follows:



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Meta-analysis of reported long-term ecological trends by CSIRO in 2015 further concludes that despite activist's concerns, the pattern throughout the Murray–Darling Basin likewise reflects fluctuating stability consistent with the regular drought–flood cycle:

We assessed trends of 301 ecological time series (mean 23 years, range 1905–2013) in two categories: (1) ‘population’ (abundance, biomass, extent) and (2) ‘non-population’ (condition, occurrence, composition). We analysed trends using log-linear regression, accounting for observation error only, and a state–space model that accounts for observation error and environmental ‘noise’. Of the log-linear series ($n = 239$), 50 (22%) showed statistically significant decline, but 180 (78%) showed no trend. For state–space series ($n = 197$) one increased, but others were stable. Distribution of median exponential rates of increase (r) indicated a small but statistically significant declining trend, though 35–39% of the series were positive. Our analysis only partly supports, though does not refute, prevailing assumptions of recent ecological decline in the Murray–Darling Basin. The pattern is of fluctuating stability, with declines during droughts and recovery after flood.⁵⁴

⁵¹ Australian Bureau of Meteorology, <http://www.bom.gov.au/climate/iod/>, accessed 29 June 2019

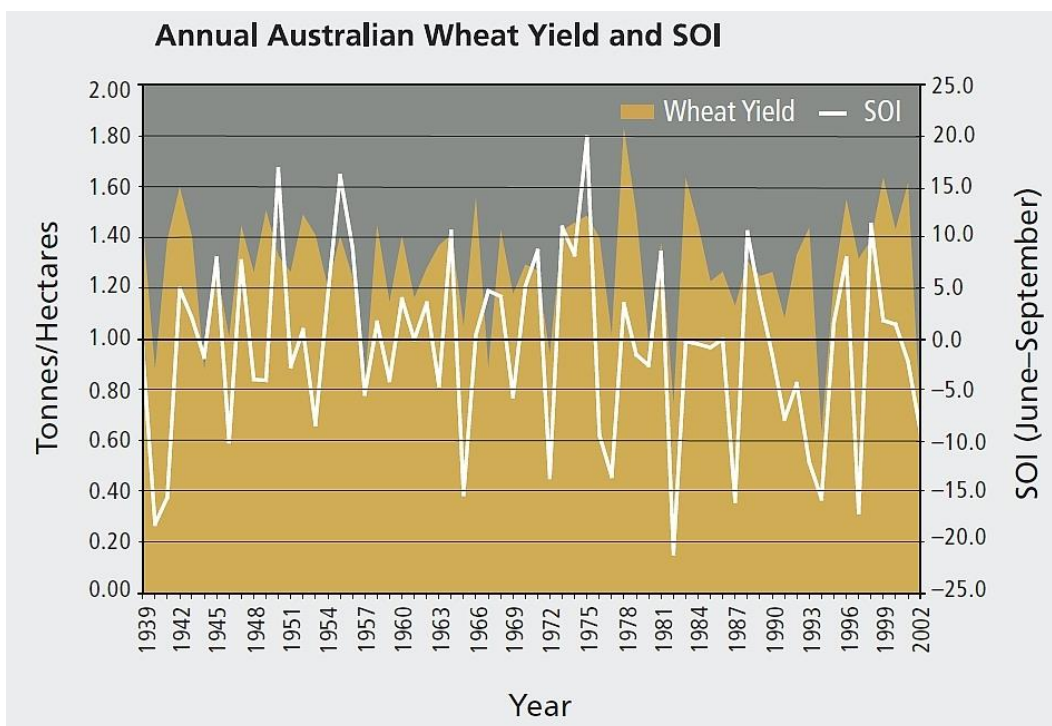
⁵² White, Barry, The Importance of Climate Variability and Seasonal Forecasting to the Australian Economy, in Hammer, Graeme L., Nicholls, Neville and Mitchell, Christopher (Eds.), *Applications of Seasonal Climate Forecasting in Agricultural and Natural Ecosystems*, Dordrecht ; Boston : Kluwer Academic Publishers, 2000.

⁵³ Domeisen, D. I., Garfinkel, C. I., & Butler, A. H. The teleconnection of El Niño Southern Oscillation to the stratosphere. *Reviews of Geophysics*, 57, p. 10, 2019, <https://doi.org/10.1029/2018RG000596>, accessed 13 June 2019.

⁵⁴ Colloff, Matthew J., Caley, Peter, Saintilan, Neil, Pollino, Carmel A. and Crossman, Neville D. Long-term ecological trends of flow-dependent ecosystems in a major regulated river basin, *Marine and Freshwater Research*, Vol. 66(11), 2015, pp. 957-969. <https://doi.org/10.1071/MF14067>, accessed 7 July 2019.

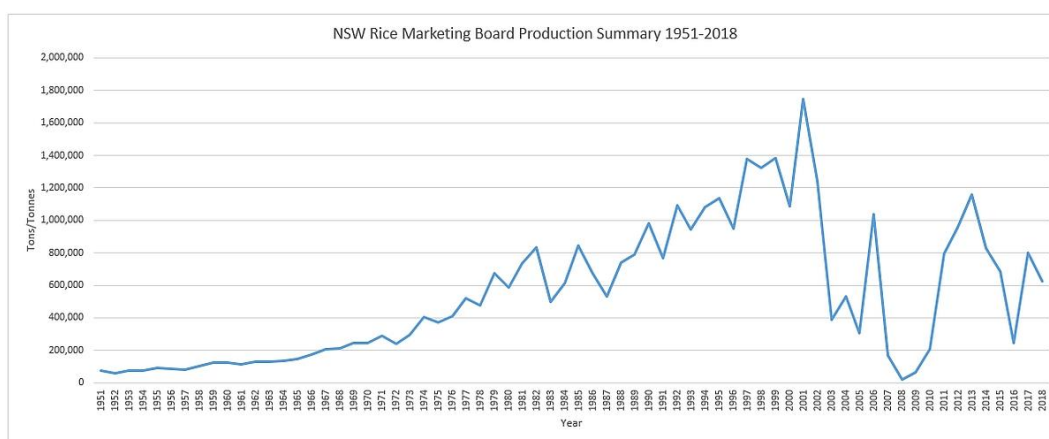
Plainly the argument on economic benefits of ecological restoration is marginal to persistent conflict over water access rights.⁵⁵

Synchronising cropping regimes with climate in the meantime, it becomes difficult to separate human and natural processes. A good example is the effect of the El Niño-Southern Oscillation (ENSO) cycle on wheat yields as a dryland indicator crop, which tends to be very direct, with yield highly vulnerable to rainfall variability independent of area sown.



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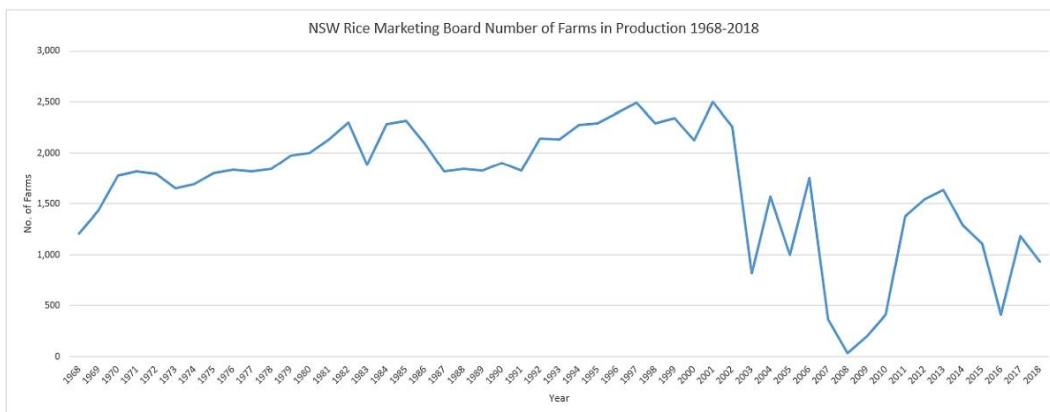
Water issues are critical for rice as a key irrigated crop on the other hand.



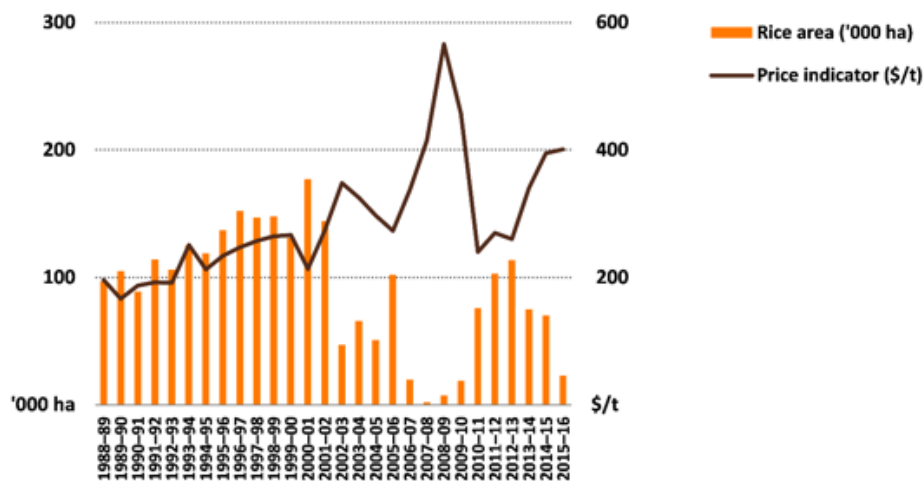
⁵⁵ see, Acuña, Vicenç, Díez, Jose Ramón, Flores, Lorea, Meleason, Mark and Elozegi, Arturo, Does it make economic sense to restore rivers for their ecosystem services, *Journal of Applied Ecology*, 2013, Vol. 50, pp. 988–997, <https://besjournals.onlinelibrary.wiley.com/doi/epdf/10.1111/1365-2664.12107>, accessed 7 July 2019; Logara, Ivana, Brouwera, Roy, Paillex Amael, Do the societal benefits of river restoration outweigh their costs? A cost-benefit analysis, *Journal of Environmental Management*, Vol. 232, 15 February 2019, pp. 1075-1085, <https://www.sciencedirect.com/science/article/pii/S030147971831363X>, accessed 7 July 2019.

⁵⁶ Australian Bureau of Meteorology, <http://www.bom.gov.au/info/leaflets/nino-nina.pdf>, accessed 13 June 2019.

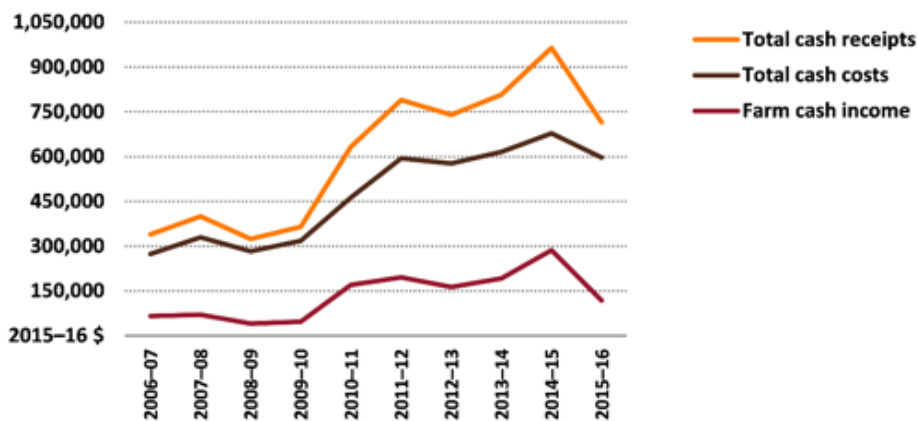
The same correlation is evident between rice production and the number of farms producing rice.



Those decisions to deny rice growers access to water came in the face of high indicative prices arising from the resulting rice supply shortfall;



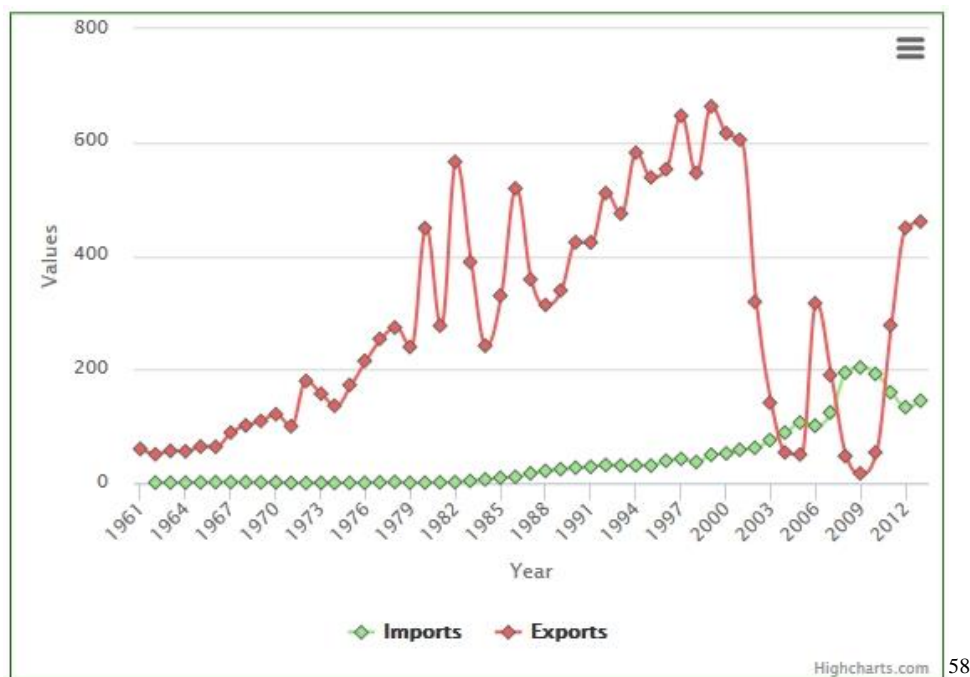
with considerable impact on farm income:



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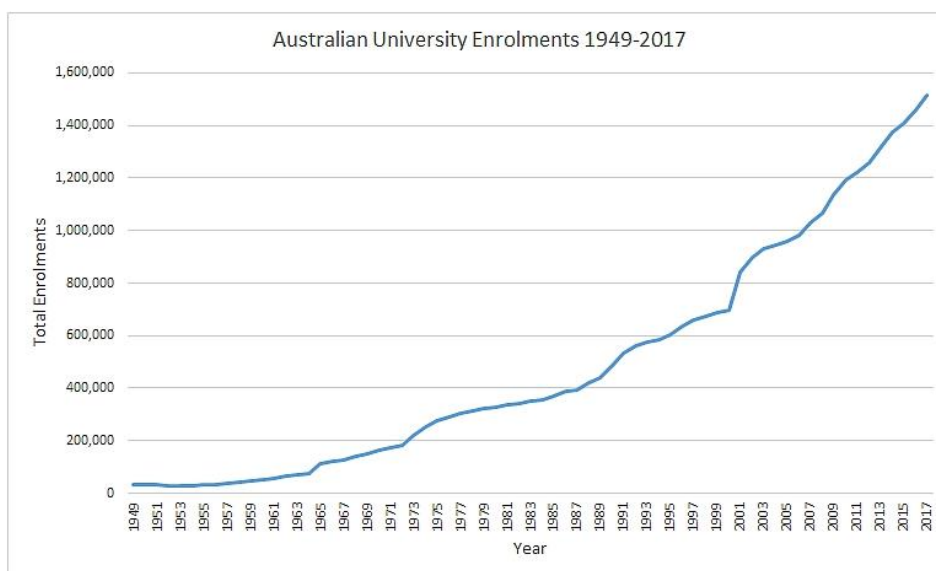
⁵⁷ Australian Government, Department of Agriculture and Water Resources, *Rice*, January 2018, <http://www.agriculture.gov.au/SiteCollectionDocuments/about/factsheets/rice.pdf>, accessed 4 July 2019.

Rice export earnings showing signs of recovery from the 2007-2008 growing season from the setback of 2006 dropped again through 2009-2011, causing far more widespread loss to the nation as a whole than ricegrowers as consumers of Murray-Darling Basin water. As irrigated rice replaced export lamb, now irrigated nuts are displacing rice as a key income generator.



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These data are reinforced by the correspondingly high negative correlation between district decline and drift of young people especially to the cities, and alongside it growth in university enrolments over the period; depleting regional human resources and draining rural communities of their best and brightest young people.



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⁵⁸ Ricepedia, <http://ricepedia.org/Australia>, accessed 4 July 2019.

⁵⁹ Department of Education, Training and Youth Affairs, *Higher Education Students Time Series Tables: Selected Higher Education Statistics*, Commonwealth of Australia, 2001,

It needs to be recalled that across the southern Riverina, from the early 1970s ricegrowing was intended to replace loss of the prime export lamb market when Britain joined the then European Economic Community. Rice is already a replacement enterprise it was hoped might halt the decline already evident at the time. Current ABS Socio-Economic Indicators reveal continuing decline of around 20% between 2001 and 2016, with farm workforce decline around 57% partly soaked up by a net increase of around 32% in agricultural manufacturing mainly in Berrigan, while private and government services employment has generally held steady.⁶⁰

Rural economy aside, these dissociated administrative decisions in the midst of ongoing political turmoil have very real social and environmental consequences. Plainly there is no correlation between rice production and El Niño-Southern Oscillation (ENSO) cycles, there is no drought effect on the decision to sow rice, and there is no discernible impact of climate change, but now there are significantly fewer intelligent, thoughtful people in the district and less income to fund working, practicable environmental maintenance.

We arrive at a reasonable conclusion based on the evidence provided by government agencies themselves that it is not drought and selfish irrigators which have been impacting on the Central Murray Basin over the period to 2017, but alienation, environmental ideology and party politics bringing in their wake long term rural and regional decline.

Transhumance

A recap on the long-term settlement of the Central Murray is in order, in particular profiling the historical development of the Southern Riverina. Policy debate needs to come back down to earth. Questions need to be asked on reasons for the fusillade of erratic, prescriptive reports over the long period of district decline, in place of simply asking the people being affected by it, and collaborating with them to find effective solutions.

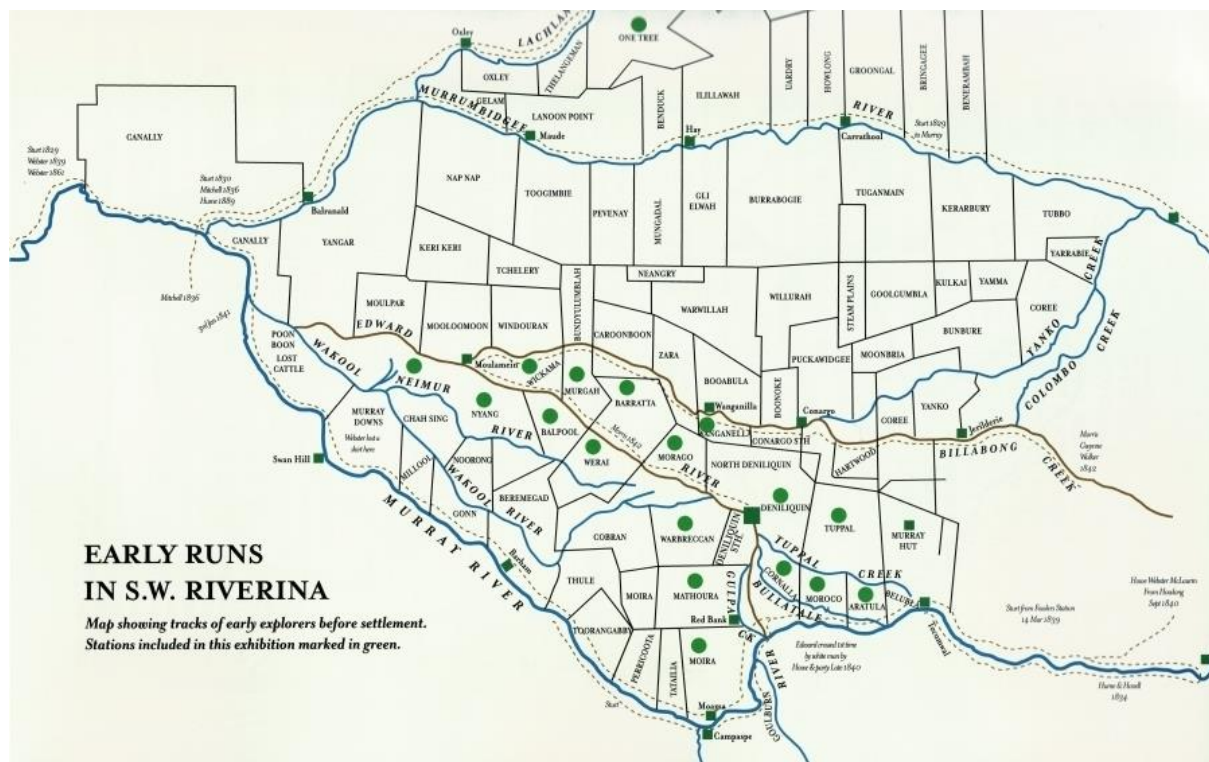
By the assisted immigration period under the colonial reforms of NSW governor Sir Richard Bourke, the predominant socio-economic organisation of the colony was no longer transported convicts guarded by detachments of military, and neither in any real sense American whalers, sealers, pirates, adventurers, bushrangers and stray remittance men but what were known as establishments still predicated upon the old plantation economy, which was not displaced as core economic foundation until the 1860s.

The practical reality is that no matter in what period of history, people must be fed. Those who made a steady living throughout the goldfields during that mid-colonising period kept gardens, grew crops, drove cattle and sheep, and ran flour mills and butcher shops. In those days with no refrigeration, meat had to be butchered and sold fresh. Providing good grazing in reasonable proximity to the settled areas around Port Phillip further south in Victoria, and closer indeed to the Victorian goldfields around Bendigo and Ballarat, from the 1840s the Southern Riverina district was quickly settled along the Tuppall, Bullatale and Gulpa Creeks, the Edward River and Billabong Creek to the immediate north.

https://docs.education.gov.au/system/files/doc/other/time_series_data_2003_-_2008.pdf;
<http://highereducationstatistics.education.gov.au/>, both accessed 9 July 2019

⁶⁰ Murray Darling Basin Authority, *Southern Basin Community Profiles*,
<https://www.mdba.gov.au/publications/mdba-reports/southern-basin-community-profiles>, accessed 21 June 2019;
National Rural Health Alliance, *A Snapshot of Poverty in Rural and Regional Australia*, October 2013.

In those times, an establishment ordinarily consisted of extended family groups with their goods and chattels, servants, labourers and as often skilled tradesmen, or including tradesmen among them. Outside of government revenues and investor-financed merchant banks providing risk capital, the wealth of pastoral establishments inheres in property, including and in particular their herds and flocks which serve as collateral, merely converted to money when sold.⁶¹ Pastoral wealth is not reckoned merely in land, but in extended kinship and cleverly functional social organisation sustained by their crops, livestock and access to water and pasture.



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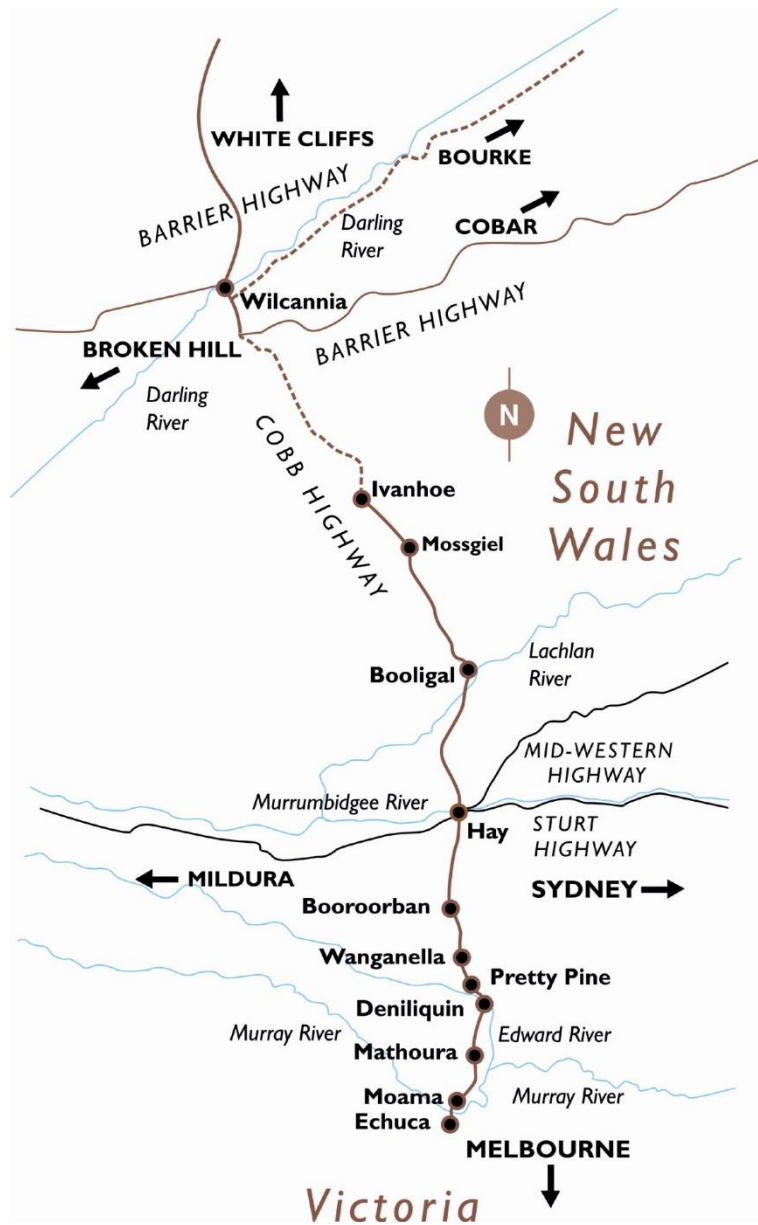
Further grazing properties were also set up along the Murrumbidgee and Lower Lachlan, with service towns springing up around the main fords or stock crossings drovers moving livestock used at Campaspe (Echuca) and Moama, Red Bank (Mathoura), Deniliquin and Wanganella, with other crossings along the Murray at Tocumwal, Moulamein, Barham and Swan Hill, and Carrathool, Hay, Maude and Balranald along the Murrumbidgee.

Drovers tell of sheep travelling around the turn of the 20th century from the Victorian high country through Mansfield and Benalla, crossing the Murray at Tocumwal then on through Deniliquin and Pretty Pine to Balranald, then across the Murrumbidgee to graze on that country. Throughout the colonial period and far beyond, sheep and cattle were driven along what became known as the Long Paddock through Deniliquin from as far afield as Cunnamulla in Queensland, Wilcannia, Ivanhoe, Booligal, Hay and down to Deniliquin, and from there into the Western Victorian Wimmera and North-eastern highlands.⁶³

⁶¹ Hardwick, Gil, *Working the Capes: The Irish cattle economy of the lower South West of Western Australia, 1829-1918*, 2002. [http://ebookswest.com.au/wp-content/files/Working the Capes: The Irish Cattle Economy of the Lower Southwest.pdf](http://ebookswest.com.au/wp-content/files/Working%20the%20Capes%20The%20Irish%20Cattle%20Economy%20of%20the%20Lower%20Southwest.pdf), accessed 5 July 2019.

⁶² Kilpatrick and Sinclair, *opera citatum*, p. 7.

⁶³ Harris, Douglas, *Drovers of the Outback*, Camberwell: Globe Press, 1982.



The notion of the pastoralist as squatter claiming ownership of land is false. Areas of land being claimed for grazing were not calculated on the land sale value but the extent of grazing for their cattle and sheep calculated on the pasture available. The meaning of the word pastoralist is not landowner but shepherd, and within a short while wagon tracks criss-crossed the vast expanse, connecting river crossings on the Long Paddock with increasing numbers of settlements and service centres catering to the industry.⁶⁴

The legal basis for licensing their claim on land arose from Governor Bourke's Proclamation of 1835 which repudiated attempts at treaty with local people in exchange for trade goods such as blankets, knives, tomahawks, tobacco and items of clothing, and asserted the crown prerogative; insisting that as far as the settlers were concerned land being unoccupied by Europeans was vacant and without government authority to do so they would be regarded as trespassers.⁶⁵

⁶⁴ Harris, Douglas, *The Teams of the Blacksoil Plains*, Globe Press, 1977, frontispiece.

⁶⁵ Founding Docs, https://www.foundingdocs.gov.au/resources/transcripts/nsw7_doc_1835.pdf, accessed 1 July 2019.

The practical, common sense basis for recognising their claim on land lies in the sheer necessity to feed such a massively rising colonial population. These charts illustrate the increasing scale of farming and grazing in the eastern colonies during the late 19th century, again during Federation in 1901, and at the end of the Great War of 1914-1918.⁶⁶

1871	Persons	Maize	Potatoes	Wheat	Oats	Barley
NSW	516,704	59,500	34,700	27,200	2,200	1,100
Vic	746,450	500	129,600	78,100	40,600	5,500
SA	188,644		9,700	189,300	1,600	7,700
QLD	121,743	10,600		1,100		300

1887	Persons	Sheep	Cattle	Horses	Pigs
NSW	1,014,607	39,169,300	1,367,800	361,000	209,600
Vic	1,025,476	10,700,400	1,303,300	308,600	241,000
SA	310,038	6,541,900	284,700	166,200	139,900
Qld	351,880	9,690,400	4,071,600	278,700	61,900

1901	Persons	Maize	Potatoes	Wheat	Oats	Barley
NSW	1,361,736	159,800	64,300	440,200	10,800	2,600
Vic	1,203,000	15,300	125,100	485,700	173,900	27,600
SA	356,074		14,800	306,100	6,600	4,800
QLD	502,279	65,300	20,300	32,500	100	2,900

	Sheep	Cattle	Horses	Pigs
NSW	40,020,500	1,983,100	481,400	256,600
Vic	10,841,800	1,602,400	392,200	350,400
SA	10,339,200	214,800	166,800	89,700
Qld	5,235,200	4,078,200	456,800	122,200

1918	Persons	Maize	Potatoes	Wheat	Oats	Barley
NSW	1,941,128	88,900	50,800	1,026,400	26,400	2,200
Vic	1,423,074	29,300	185,100	1,027,000	111,400	44,700
SA	450,636		11,500	780,400	22,600	37,500
QLD	701,472	104,300	22,500	28,200	800	3,300

	Sheep	Cattle	Horses	Pigs
NSW	42,367,300	3,148,300	740,800	395,600
Vic	14,760,000	1,371,000	514,100	323,200
SA	6,229,500	313,200	262,800	110,400
Qld	17,204,300	5,316,600	733,000	172,700

⁶⁶ Australian Bureau of Statistics. *3105.0.65.001 Australian Historical Population Statistics*, 2019; *71240DO001_201011 Historical Selected Agricultural Commodities, by State (1861 to Present)*, 2011

The Drought Myth

Innovation

The work of colonial administration during the period dating from the early 1830s through the land law reform period of the 1860s and beyond, was less involved with constant policing as it had been during the convict period, but with assisting skilled immigration and formalising arrangements to license available cropping and grazing land with the clear intention to get the colonial economy moving; an arrangement which functioned well for the times.

When we speak of flood and drought cycles in Australia, the continent as a whole is not affected evenly right across, but seasonally. Settlement and development of these districts proceeded along the north-south stock routes for the simple reason that stock had to be pastured where water and pick were variously available, leading to development of stock routes along what became known as the Long Paddock stretching ultimately up into north Queensland.

Well before the present-day series of dams, weirs and barrages to regulate flow along the rivers, settlers installed steam-driven pumps for their water and irrigation needs; a familiar installation throughout the Central Murray, replaced during the mid-20th century by stationary diesel engines with fuel tanks.



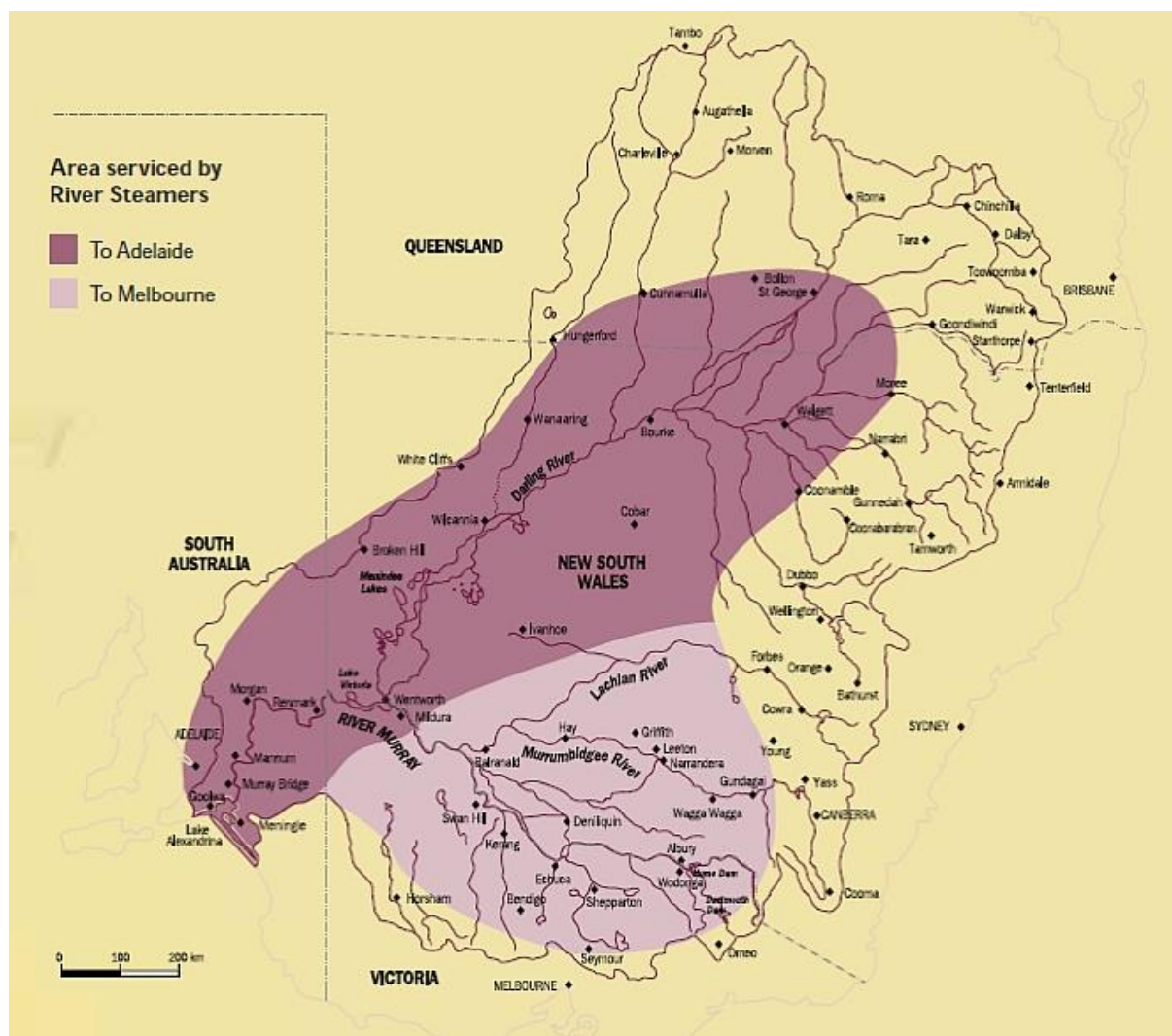
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As already pointed out, rural prosperity does not inherently reside in ownership of land as such, but access to grazing on the one hand, and cropping on the other. In that respect especially, breaking up very large landholdings makes economic sense because access to land and water then becomes far more flexible, far more convenient to managing family and social organisation, and with the arrival of steam engines far more adaptable to the vagaries of weather and climatic fluctuation.

⁶⁷ Mallen-Cooper, Martin, Murray Darling Basin drought myth disservice to environmental progress, *The Land*, 16 May 2018, 3:00 pm, accessed 25 June 2019.

What we witness is a great number of people moving up and back through the district, with families with children living more sedentary lives in one or another town, and connections spreading up the inland, adapting as they went to the drought-flood cycle in the same manner as native birds and wildlife migrate back and forth along their respective pathways.

In contrast with this north-south transhumance relying on access to water and feed over large areas, and with them local solutions to life, from 1853 river steamboats plying the vast inland river systems also intersected the stock routes and wagon tracks and the stations dotted along them, to carry supplies and equipment upstream and wool, hides, skins, and tallow back down to city markets.⁶⁸



The riverboat trade lasted from 1853 to 1914, peaking during the hey-day of the 1870-1890s, with boats built locally from River Red Gum and fuelled by whatever timber was available along the river systems, up the Murray as far as Wagga and Gundagai, the Darling to Cunnamulla and St George in Queensland, and Moree and Coonamble in NSW, linking up with horse and bullock teams to deliver their goods, and later railway lines extending out Sydney and Melbourne.

⁶⁸ Simpson, Margaret, *Paddle Steamers - one of Australia's inland pioneering transport systems*, Museum of Applied Arts and Sciences, <https://maas.museum/inside-the-collection/2013/09/16/paddle-steamers-one-of-australias-inland-pioneering-transport-systems/>, accessed 4 July 2018

The real issues facing the riverboat crews were snags, rock and clay reefs, sandbars, overhanging branches, the occasional boiler explosion, and fire on board ship. While peak floods allowed riverboats to proceed overland, the risk of being stranded away from the river channel as the waters abated was very real. Dry periods created extra work of winching boats along low rivers, and loading and unloading cargo up steep banks.⁶⁹



This river trade benefitted Adelaide especially, by the 1880s prompting the extension of railways west from Sydney and north from Melbourne to intercept the riverboats and direct trade back their way. Most of the delay in building railways was due to the gold rush of 1851 resulting in severe shortage of labour, while NSW especially faced difficulty over harsh terrain and long distances needing to be covered, but by the 1870s construction was well underway.⁷¹

The introduction of steam engines, whether driving irrigation pumps, river boats or railway trains, is relevant because alongside mandated land-clearing, the huge industry in firewood devastated the great forests along the inland river systems, in contrast with timber-cutting for public buildings, houses, schools and other essentially civic and domestic construction.

⁶⁹ Murray-Darling Basin Authority, *Inland Shipping: The navigation of the Murray-Darling River System*, https://www.mdba.gov.au/sites/default/files/archived/mdbc-SW-reports/2149_inland_shipping_navigation_murraydarling_river_system.pdf, p. 5, accessed 4 July 2019

⁷⁰ Museum of Applied Arts and Sciences, <https://collection.maas.museum/object/30183>, accessed 4 July 2019.

⁷¹ See John Gunn, *Along Parallel Lines, a History of the Railways of New South Wales, 1850-1986*, Melbourne, Melbourne University Press, 1989, pp 1-78, and Robert Lee, *The Greatest Public Work, the New South Wales Railways, 1848-1889*, Sydney, Hale and Iremonger, 1988, pp 1-66.

Like land and water, access to natural resources in forestry also makes far more sense broken up into parcels to be selectively logged evenly across the bioregion rather than denying access to very large land areas tied up in the crown estate, set aside as national parks, and in the process restricting the extra logging to meet demand to private freehold lands and placing those reserves under added pressure.

Likewise, where under the old regime access to water inhered in the associated land title, since the pre-federation claim of crown sovereignty over water reinforced by COAG water reforms of the late 1990s separating entitlement to use water from entitlement to use land, current thinking allows greater flexibility and adaption to the conditions including critical human use, market demand, food and housing affordability.

To the matter at hand, as time went by and the colonial economy stabilised and more effort went into improvements, including development of better crop strains suited to the recurrent drought and flood conditions, improved livestock bloodlines adapted to the climate regime, new inventions like the combine harvester and stump-jump plough came along, so did surveying, engineering, flood mitigation and drought amelioration measures.

In the event, the real-time work issues facing riverboat crews further led to agitation to mediate water levels through installing locks and weirs along the length of the river system.⁷²

History is not linear. Other forces impacted on the progress of development throughout the colonies. A clear view of progress as it unfolded can be had through understanding the way the wool industry as a key national economic development indicator grew over time.

By 1800, John Macarthur had established his sheep flock, and Governor King, impressed by the quality of some of the fleeces, directed the attention of the British Government to the merits of the local product. Government response, while welcoming the new potential to expand wool production, instructed him that the best wool was to be sent to England, *unprocessed*, and the manufactories of the colony confined to coarse cloth. The British Government had its hands full trying to quell the on-going Luddite riots and was eager to grasp any opportunity that promised to generate employment for the "bellicose spinners."⁷³

The first textile mill established at Parramatta in 1800 was used to process coarse wool, while the better quality fine wool was to be sent to England. The first auction of Australian wool is held at Garraway's Coffee House in London in 1821 and brought \$2.27 per kilogram. To gain higher prices on the London market, at that time Australian sheep are washed before shearing, and clean wool packed in bales for export.

While woolgrowers continued to experience cycle boom periods and depressions, it was more profitable at times to boil down sheep to extract tallow, and tan their hides for leather. Wool auctions began in the 1840s, but the bulk of the clip is still sold on the London market. After George Peppin assembled a fine wool Merino flock in the Riverina, the Peppin strain quickly became the most numerous and productive wool growing sheep in the world.

⁷² MDBA, *Inland Shipping, opera citatum*, pp. 6-7.

⁷³ Australian Academy of Technological Sciences and Engineering, *Technology in Australia 1788-1988*, Australian Science and Technology Heritage Centre, Melbourne, 1988, p. 272.

During the 1840s to 1870s wool is shipped to England and Europe via the Cape of Good Hope by fast wool clippers. The opening of the Suez Canal in 1869 and the introduction of steamships saw the end of the fast clipper ships. In 1875 wool is shipped to China, while by the mid-1920s nearly half the Australian wool clip is still being bought by England, with Japan and the US emerging as major buyers at auction. By the 1930s, wool represents over 62% of the total export value of primary products, and Australia's fine wool is in demand worldwide.⁷⁴

Alongside notable pastoral establishments including the Peppin, Falkiner and others, settlement of the Southern Riverina included skilled artisans; blacksmiths, gunsmiths, mechanics, ship-, wheel- and wagon-wrights, who also variously took up land, ran cattle, developed and financed small business, and in many cases franchised and exported enterprise to other states and over the period to England.⁷⁵

With large families still facing the eternal problem for growing human population of access to land and resources, members of the same families in due course worked privately as drovers, mechanics, shopkeepers, innkeepers, steamboat captains, school teachers and clergy, later truck drivers, as well as the usual recourse in military service. These same dynamics are in play across the region still to this day.

In illustration of the connections among these families and their contributions extending across Australia, in 1910 Riverina woolgrower Otway Rothwell Falkiner of Boonoke married Una Caroline Le Souef, whose father Albert Alexander Le Souef had been pioneer and director of the Zoological Gardens (Zoological and Acclimatisation Society) at Royal Park, Melbourne.

Albert Le Souef was usher of the Black Rod in the Legislative Council of Victoria from 1863-93, longstanding member of the Aborigines Protection Board on the Goulburn River, member of the Australasian Association for the Advancement of Science from 1888, corresponding member of the Zoological Society, London. In 1870 he became secretary and in 1882-1902 succeeded his father as director of the Zoological Gardens.

Of three of her brothers, the eldest William Henry (Dudley) Le Souef was known internationally as an ornithologist who campaigned for the introduction of zebu-cross cattle into northern Australia. He was also a prolific writer, author of *Wildlife in Australia*, *Animals of Australia*, and *Birds of Australia*, as well as scientific papers and articles. He was a foundation member, president, and honorary secretary of the Royal Australasian Ornithologists' Union, the Victorian Field Naturalists' Club, the Royal Geographical Society, the Royal Society, and the National Parks Association.

Her second brother Ernest Le Souef qualified in 1895 as a veterinary surgeon, and in 1897 was appointed founding director of the Perth Zoological Gardens in Western Australia. An expert marksman, Ernest was a foundation member of the Cannington Mounted Rifles in 1899. In 1901 he was commissioned lieutenant in the Australian Army Veterinary Corps and in 1912 was appointed principal veterinary officer (5th Military District) with the rank of major. He left the Australian Military Forces in 1930 with the rank of colonel.

⁷⁴ White, Barry, *Milestones: A brief history of the Australian wool industry*, <https://www.woolwise.com/wp-content/uploads/2017/05/01.2-Milestones-in-Australian-Wool-History-Notes.pdf>, April 2017, accessed 10 June 2019.

⁷⁵ Hosking, Rex, *From Cornwall to the Outback*, Hawthorne, South Australia: Hosking Publishers, 1987; Fraser, Rod, *The Champion of the Seas*, Glen Waverley, Victoria: Pilgrim Print, 1999; Buxton, G. L., *The Riverina 1861-1891: An Australian Regional Study*, Melbourne University Press, 1967.

Ernest Le Souef was a close colleague and associate of University of Western Australia founder and benefactor Sir John Winthrop Hackett. From 1919-32 he lectured part time in agriculture at UWA and in 1923 contributed to the containment of an outbreak of rinderpest. In 1926 he was appointed lecturer (part-time) in charge of the department of veterinary science, and founded a museum in Perth zoo used by students for practical anatomy and physiology.

In 1903 a third brother Albert Sherbourne Le Souef was appointed secretary of the Zoological Society in Sydney where he developed what is now Taronga Park Zoo from the dirty cramped quarters along modern lines. He was a member of the Royal Society of New South Wales, a councillor of the (Royal) Zoological Society of New South Wales for almost fifty years and a corresponding member of the Zoological Society, London.⁷⁶

By the time of the Great War of 1914-1918 science was well-established in Australia and very well connected, growing out of pastoral productivity and significant family and interpersonal relationships. All the old Riverina families have the same story to tell of intermarriage, extended networking and collaboration, education and scientific endeavour; those cited here above merely happen to be well-known public figures while others prefer to maintain their privacy. What we can include from the records are substantial extended-family endeavours including horse-racing, engineering, gunsmithing and photographic studios covering royal tours, which were franchised across Victoria, South Australia, Western Australia and back to Great Britain itself.

What else emerges here, ethnographically, is a quintessential Englishness concerned with 'doing the right thing', with acclimatising the torrent of immigration and building institutions and with them infrastructure and economic development entirely disconnected from their Antipodean landscapes, and indeed from the prior and ancient Indigenous cultures of this land.

In the event, in 1916 Prime Minister Billy Hughes further established the Advisory Council of Science and Industry which evolved to become the Institute of Science and Industry in 1920. In 1926, his successor Stanley Bruce amended the Science and Industry Research Act to establish the Council for Scientific and Industrial Research (CSIR). The Act was changed again in 1949 to form the Commonwealth Scientific and Industrial Research Organisation (CSIRO), which continues under to this day.⁷⁷

Division

Organisational structures both outside and within government changed by the end of this period, which delayed further progress and altered the way decisions are being made in respect to water and the ongoing necessity to resource and provision the growing human population, and not least to keep them gainfully employed.

Until 1880, the marketplace for Australian wool was London, and wool was consumed largely by British spinning mills. To this point much of the focus on Australian wool had been on production, but the US and Japan entering the world market combined with increasing demand from textile mills being established here in Australia. Soon after, prompted by local woolbrokers,

⁷⁶ A. Dunbavin Butcher, Le Souef, Ernest Albert (1869–1937), *Australian Dictionary of Biography*, National Centre of Biography, Australian National University, <http://adb.anu.edu.au/biography/le-souef-ernest-albert-7746/text12401>, published first in hardcopy 1986, accessed online 18 July 2019.

⁷⁷ CSIRO, *Our History*, <https://csiropedia.csiro.au/our-history/>, accessed 8 July 2019.

smaller producers and increasing diversity of buyers, the primary market for Australian fine wool relocated to Melbourne and Sydney.

In place of the loose, disorganised, largely speculative sales of Australian wool, by the closing decades of the 19th century wool was sold by a national system of auctions selling from less than 30% during the early 1880s to over 93% by the onset of the Great War of 1914-1918.⁷⁸

The Shearers' Strike of 1886 led in the meantime to formation the following year of what quickly became the Amalgamated Shearers' Union of Australasia, and close behind it in the same year mining and pastoral workers united to form the Australian Workers Union; in the course of time absorbing numbers of smaller workers' unions especially in those industries which were the major source of Australia's wealth.

After years of conflict between pastoralists and shearers, in 1887 the Australian Socialist League was formed to promote social theory being imported from revolutionary Europe on the basis of a 'scientific cooperative strategy' aimed at building socialist society and establishing worker-owned enterprise. The strike of 1891 saw formation of the Australian Shearers' Union and alongside it the Australian Labor Party, then in 1894 pastoral labourers united to form the Australian Workers Union.

From 1895 to 1903, during one of the most severe droughts in colonial history, while shearers and pastoral workers struck for wage maintenance sheep numbers fell by almost half, taking nearly 30 years for flocks to build up to the previous record of 106 million. The reality is that given fluctuating amounts of money available to pay wages depending on drought or boom, the decision comes down to keeping more jobs at lower rates, or the select few in more secure jobs at coercively higher rates detached from and independent of productivity.

As Henry Ford famously declared, it's not the employer who pays the wages; employers only handle the money, it's the customer who pays the wages. President John F. Kennedy once also remarked that farming is the only business which buys at retail, sells at wholesale, and pays freight both ways.

The case of Henry Ford paying his workers higher wages on the commonplace argument that they could then afford to purchase the cars they were assembling doesn't even hold, when he faced crippling turnover rates from walk-offs and constant recruitment,⁷⁹ where in Australia there was a persistent over-supply of labour due to people still flooding into the country with no land left to take up, and like everybody else facing recurrent drought in semi-arid landscapes.

For pastoral unions to insist on wage maintenance and stable employment during drought and market downturn as they may well do in manufacturing, which buys at wholesale and sells at retail, able to factor in wages as production costs at the retail end, is not feasible in this harsh environment.

⁷⁸ Ville, Simon, The relocation of the Market for Australian Wool, *Australian Economic History Review*, Vol. 45(1), 2005, pp. 73-95.

⁷⁹ Worstall, Tim, The Story of Henry Ford's \$5 a Day Wages: It's Not What You Think, *Forbes Magazine*, 4 March 2012, <https://www.forbes.com/sites/timworstall/2012/03/04/the-story-of-henry-fords-5-a-day-wages-its-not-what-you-think/#5cb3fe88766d>, accessed 10 July 2019

The point to be made here is that there is the same air of unreality about union strike propaganda, the same disconnect as propaganda on Murray-Darling environmental impacts, lecturing to the same political targets among rural and pastoral landholders.

Money is anyway worth less tomorrow, while productive resources in land, water, pasture, good soil, perpetually hold their value. We are confronted with two opposing systems of thought; one adapted to inconsistent though now largely predictable weather and cyclic climate fluctuations, and the other fighting for steady income and consistent lifestyle. The one remains beholden to the natural rhythms, and the other relying ultimately on political and judicial determination.

Regardless of who happens to be the boss, life in rural Australia is contingent upon varying adaptability during worst drought or best average conditions with boom periods merely jam on the bread and butter, or somewhere in between depending on whether enough can be set aside in the good years. From the early years of productive agriculture in the Riverina the reckoning was there, that "Farmers are not made by an Act of Parliament."⁸⁰

*Between 1861 and 1891 the area cultivated in the Albury, Deniliquin and Wagga districts rose from less than 8,000 acres to nearly 200,000 acres. This overall rising trend was subject to annual variations common to agriculture. A year of low harvest caused by drought, floods, rust or locusts was followed by increased acreage, as farmers attempted to recoup their losses. Bountiful years when grain prices fell and hay and horse feed were adequate for two or more years, were followed by decreased acreage.*⁸¹

Across the Riverina a commonplace rule of thumb is three good years in seven, which imposes additional work stress on everybody to bring in enough during the good years, with frugal 'doing without' covering the bad.

Where farming and pastoralist establishments still relied on extensive family networks, rural and mining workers organised themselves instead into political pressure groups which continued to campaign and strike for better wages and conditions independent of economic conditions.

This agitation by workers led in turn to formation of their political wing, The Australian Labor Party, whose constitution stipulates that it is a democratic socialist party. At the first federal election in 1901 Labor's platform called for White Australia Policy, citizen army and compulsory arbitration of industrial disputes. Historically they have been fairly pragmatic on issues, taking sides consistent with their broad socialist ideology.

Aside from these social divisions constructed from theory and ideology, what we see in this long drawn-out process is alienation from the land, from weather and climate, in favour of social ideas and principles. It is not the purpose of this paper to critique Labor theory, merely to outline the widespread disconnect among people still streaming into the country which took place during this period immediately prior to Federation.

The very real issue needing to be addressed here is that in embracing imported Weberian theory within Marxist social analysis presupposing public/private-city/country dichotomies and binary structural oppositions on the basis of 'class' (and today race, sex and gender as 'identities'), by

⁸⁰ *Riverine Grazier*, 13 August 1881.

⁸¹ Buxton, *The Riverina 1861-1891, opera citatum*, p. 189.

eschewing empirical evidence and with its practical reality as 'positivist' in favour of relativist interpretation depending on structural positioning and with its political orientation, the acquiring of field data becomes inherently flawed; subject to ideological bias and with its prejudice before the fact.

In response, over time primary producers with increasing political sophistication formed their own industry bodies, including The Ricegrowers' Association of Australia, Cotton Australia, The Cattle Council of Australia, The National Farmers Federation among others, along with their respective state bodies. We see bitterly entrenched division along these same lines still today, conspicuously divided on water and catchment management policy, where reasonably it is the working farmers and their communities out there on the ground who are being impacted by remote, ideologically abstracted decision-making and need to be consulted.

Federation

The reality of developments along the Murray River in this light especially need to be considered before we are able to bring this section to fruition. Regardless of any other factor, the ongoing matter of all those people flooding into the country still needs to be taken into consideration.

By the time of Federation in 1901 the country was deeply drought-affected with rivers drying up and little or no water flowing. Here is the Murray River pictured at the time.



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Much has been said of the Federation Drought of 1895-1903, but as we have seen the settled pastoral establishments, aside from cutting back as they do, continued to operate according to climate and weather as always, with the singular difference that wool was now being auctioned locally. The more significant impact of the drought was rather on all these new people migrating to Australia, as they continued to do across North America and Southern Africa at a time when the land had been taken up and agricultural production was simply not keeping pace.

⁸² MDBA, <https://www.mdba.gov.au/file/state-library-victoria-man-bed-murray-1901-drought-henry-wilf-out-copyright-1jpg>, accessed 14 June 2019

The effect of the Federation Drought was exacerbated further by economic depression and labour strikes, resulting in sheep and cattle numbers falling from 91 to 54 million, and 11.8 to 7 million respectively. To make matters worse, rabbit numbers increased to plague proportions with some farmers losing everything, walking away from it.

In these circumstances, in the approach to federation of the colonies, in 1891 a Constitutional Convention was held in Sydney comprised of delegates from the various state parliaments, which approved a draft constitution. Delegates to the next Convention of 1897-1898 were chosen by popular vote,⁸³ and met variously in Adelaide in March 1897, Sydney in August 1897, and Melbourne in January 1898.

We can see in these constitutional debates the ideological foundations of Australia as a nation, superseding the enlightened practicality which had established the colonial economy and its early prosperity, and continuing to inform decision-making to this day.

Through the long series of droughts through 1864-1866, 1880-1886, The Federation Drought 1895-1903, The Great War Drought 1911-1916, 1918-1920, The Second War Drought 1939-1945, 1958-1968, 1982-1983, The Millennium Drought 1996-2010; all intermediated by widespread flooding, the Australian population continued to grow exponentially.

The massive flood event in 1917, coming as it did between the Great War drought and the following drought of 1918-1920, created as much havoc as did the Murray River flood of 1956. This picture was taken outside the Edward River Hotel, Deniliquin, in 1917.



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⁸³ Australian Bureau of Statistics, *1301.0 - Year Book Australia*, 1909

⁸⁴ State Library of New South Wales, <https://www.sl.nsw.gov.au/collection-items/1917-flood-photograph-taken-edward-river-hotel-three-men-horse-deniliquin-nsw>, accessed 7 July 2019.

In 1915 the River Murray Waters Agreement on the management and sharing of River Murray waters was signed by the Commonwealth, New South Wales, South Australia and Victoria, to include the main provisions that, firstly, construction of 26 weirs and locks on the River Murray from Blanchetown in South Australia to Echuca in Victoria; and second, construction of nine weirs and locks on the lower part of either the Darling or Murrumbidgee rivers. Only some of these works were completed, as follows:⁸⁵

Lock and Weir completion dates

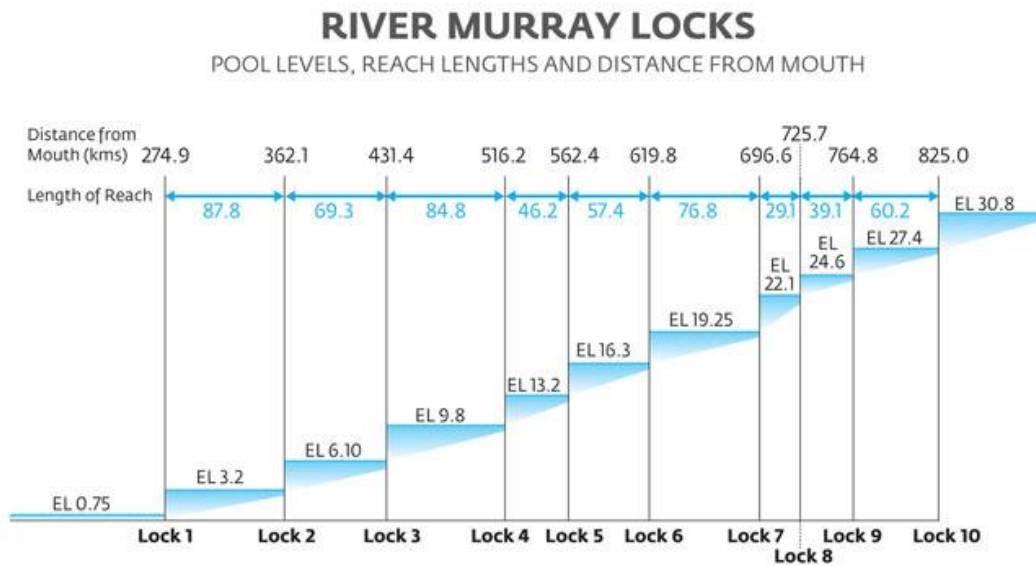
<i>Structure</i>	<i>Completed</i>	<i>Location</i>
Lock & Weir 1	1922	Blanchetown
Lock & Weir 2	1928	Waikerie
Lock & Weir 3	1925	Overland Corner
Lock & Weir 4	1929	Bookpurnong
Lock & Weir 5	1927	Renmark
Lock & Weir 6	1930	Murtho
Lock & Weir 7	1934	Rufus River
Lock & Weir 8	1935	Wangumma
Lock & Weir 9	1926	Kulnine
Lock & Weir 10	1929	Wentworth



These locks provided for a fall of around 175 metres over 550 Km starting some 275 Km from the river mouth, or something like 1: 3,000 slope, only partly to control the flow of water but because for South Australia the riverboat trade was still so lucrative and economically important,

⁸⁵ <http://www.murrayriver.com.au/about-the-murray/locks-weirs-dams-barrages/>, accessed 6 July 2019.

so the scheme included locks alongside the weirs enabling riverboats to negotiate the newly constructed barriers to navigation.



Construction of the Goolwa Barrages at the Murray Mouth was simultaneously agreed to as a concession to South Australia for the omission due to cost and redundancy of some of the original 26 navigation locks and weirs, at that time less concerned with fresh water in the Lower Lakes but maintaining navigable water levels for the riverboat trade. River trade was already well in decline through introduction of road transport by the late 1920s, but the work went ahead anyway as a bargaining chip for South Australia to obtain the extra Commonwealth funding.

Construction of the Hume Dam above Albury was begun by NSW and Victoria in 1919. Over the next 17 years, thousands of men were employed on its construction. Before it was completed, however, the effects of the depression annulled many of its benefits. The original plan provided for storage capacity of 1,100,000 acre-feet (1,360 GL); then increase capacity to 2,000,000 acre-feet (2,470 GL) as work was carried out. Hume Dam's current capacity is 3,040 GL.

To distribute the waters assured by the Hume Dam, it was agreed in 1934 that a diversion weir should be built on the Murray at Yarrawonga, with a spillway in which steel floodgates would enable water to be held to a depth of 15 metres; allowing diversion by gravitation into two main canals capable of taking water to large areas of Riverina and northern Victoria. The Yarrawonga weir was completed along with the Mulwala Canal through to Deniliquin in 1939.

The two key schemes along the Murray River Basin subject to the most bitter conflict are by no accident those projects initiated together during the Great Depression to provide employment, being the Mulwala Canal through the Lawson Siphons past Deniliquin supplying irrigation water to the Edward-Wakool system, and the Goolwa Barrages isolating the Lower Lakes estuary from the sea to ensure consistent water levels supporting the lucrative South Australian river trade.

This line of reasoning is not yet satisfactory. We haven't yet taken into account the impact of the Second War, how these projects were financed, or key personalities involved during the interwar period. We are admonished to observe ontological economy in putting an argument; yet at once Ockham's Razor requires us first to complete the theorem. *Pluralitas non est ponenda sine necessitate.*



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Behind the South Australian government media propaganda and with its heritage anxiety among the environment damage hyperbole, the story of the engineer and bureaucrat heading the works, Hugh Thomas Moffat Angwin, is salutary. Earning his degree through the University of South Australia, he worked in England in 1912, then again during war service in 1917-1918 he further inspected their river and dock works. Returning to Adelaide he was promoted assistant resident engineer with River Murray Works, then in 1919 to assistant constructing engineer. In 1930 he became chief engineer for the South Australian Harbours Board.

During the Second War his department handled very large projects including the mining of brown coal. As part of the state-sponsored program of industrialisation, in 1944 he completed construction of a pipeline from Mannum on the Murray River over 400 Km around Spencer Gulf to supply fresh water to Broken Hill Propriety's blast furnaces at Whyalla. Among his other projects were the Mannum to Adelaide and Barossa to Salisbury pipelines, sewerage works at Glenelg, Mount Bold and South Para reservoirs, and the Metropolitan Floodwaters Scheme.

From 1941 to 1946 Hugh Angwin was chairman of the Institute of Engineers, Adelaide; from 1946 chairman of the Electricity Trust of South Australia; 1946-49 deputy commissioner of the River Murray Commission, and 1947 member of the Royal Commission into the State Electricity Commission of Victoria. In 1949, overloaded with work he died suddenly from heart attack on a public street in Adelaide.⁸⁷

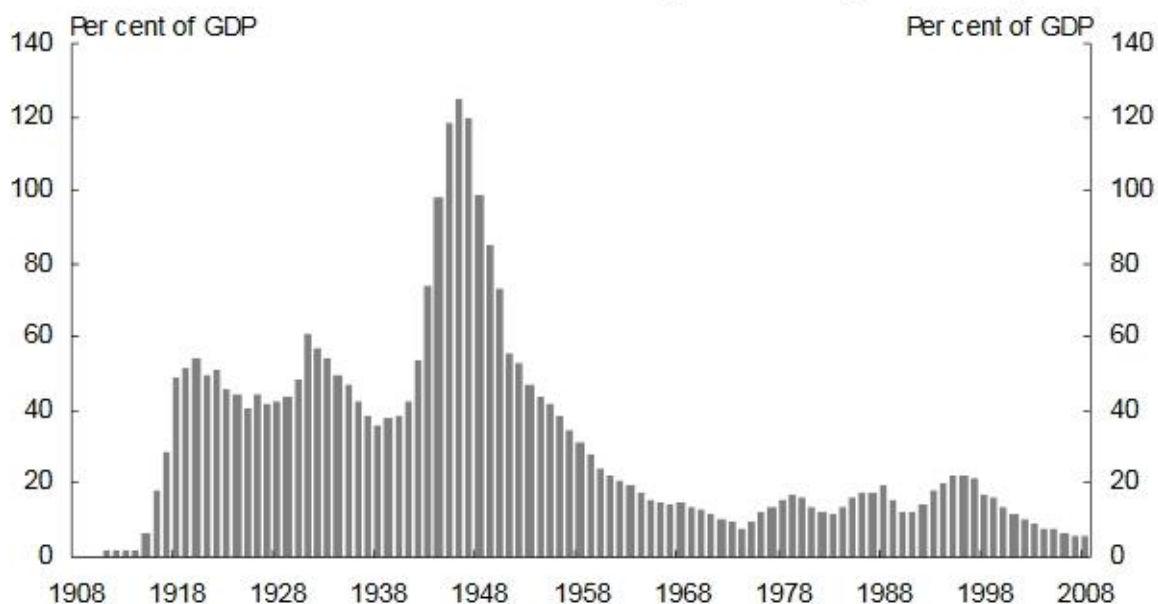
The Snowy Mountains Scheme was not initiated until after the Second War, by NSW Labor Premier William McKell who put the proposal to prime minister Ben Chifley, with a counterproposal from Victorian Premier John Cain Snr to include hydro-electricity generation. What is interesting and relevant here immediately is the timing of construction of the Goolwa Barrages, drawing firstly on labour available among returned Great War soldiers, and as further works were approved at the height of the 1930s depression, among unemployed men.

⁸⁶ Paddle steamers at Morgan, South Australia, 1921, <http://www.murrayriver.com.au/paddleboats/river-boat-trail-morgan/>, accessed 10 July 2019.

⁸⁷ Suzanne Edgar, Angwin, Hugh Thomas Moffitt (1888–1949), *Australian Dictionary of Biography*, National Centre of Biography, Australian National University, <http://adb.anu.edu.au/biography/angwin-hugh-thomas-moffitt-9368/text16455>, published first in hardcopy 1993, accessed online 13 July 2019.

It needs to be kept further in mind that none of these works were funded by revenues from pastoral or agricultural production seeking return on the investment, nor from unions winning higher wages, but by accrued commonwealth government debt. The ongoing disconnect between policy and reality along ideological grounds was firmly embedded by this time, setting the precedent and preparing the ground for even further conflict to follow.

Chart 5: Australian Government public debt (at 30 June)⁶



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The environmental effects are massive. In the aftermath the impacts wrought by construction of the barrage to restrict entry of seawater into Lake Alexandrina radically transformed the estuary and allowed massive growth of flood-tidal delta sand deposits at the river mouth, which now require constant dredging.⁸⁹

Bird Island at the outlet of Murray did not exist before 1940, and by the mid-1950s sand shoals were enlarged and vegetation was established leading to salt marsh and formation of the low dunes.⁹⁰ In the continued presence of the barrages and resulting restrictions on river flows, Bird Island symbolises how human activity can cause rapid, irrevocable changes to coastal-estuarine environments.

Rapid evolution of the flood-tidal delta at the Murray Mouth following construction of the Goolwa Barrages should rightly be seen as "a canary in the cage of river management", not remnant environmental impact to be preserved as 'heritage' but dire warning of the consequences arising from overzealous human intervention.

⁸⁸ Di Marco, Katrina, Pirie, Mitchell and Au-Yeung, Wilson, *A History of Public Debt in Australia*, Australian Treasury, Canberra, June 2017, p.8, https://static.treasury.gov.au/uploads/sites/1/2017/06/01_Public_Debt.pdf, accessed 10 July 2019.

⁸⁹ Bourman, R. P., Murray-Wallace, C. V., Belpero, A. P. and Harvey, N., Rapid Coastal Geomorphic Change in the River Murray Estuary of Australia, *Marine Geology*, Vol. 170, Issues 1-2, October 2000, pp. 141-168.

⁹⁰ James, Kristine F., Bourman, Robert, Harvey, Nick, Rapid Evolution of a Flood Tidal Deltaic Island in the River Murray Estuary, South Australia: A Canary in the Cage of River Management. *Journal of Coastal Research*, Vol. 31, Issue 5, pp. 1103–1119.

Panic

As Adam Webster points out in introducing his history of the Murray River dispute, talk of reducing the flow of water down the Murray "evokes strong emotions in South Australians, and especially in their members of parliament." The dispute over sharing the waters of the Murray River, when South Australia in particular was always more concerned with river navigation and industrialisation than irrigation, or indeed the environment, not only shaped the constitutional debates it influenced drafting of the constitution and in turn shaped the way disputes between the states are resolved still today.⁹¹

The countervailing issue at this point is not states' rights but that present-day ideological anxiety and bureaucratic ardour accumulating sovereign debt against future taxation revenues to protect the environment, is the same ideology which sought 80-100 years ago to protect employment, protect wages and working conditions, protect states' rights, protect Aborigines while we're at it, and in the process 'develop' regardless of the climate, except caught up in arbitrary decisions on the location of colonial boundaries and their long-term political consequences.

It becomes increasingly difficult the further we proceed to countenance this contrived distress over environmental degradation when it is humans degrading their environment; ideologically-based human decision-making degrading society by creating endless conflict. With the onset of unreality, error merely compounds error. The argument for environmentally protecting highly modified estuarine systems is much like that put by environmentalists insisting that something be left for their grandchildren, who then turn around and produce 3-4 billion more children.

In this respect, the weather station 23718 at the nearby Goolwa Council Depot, in use since 1870, records average rainfall at between around 20-60 mm (0.8-2.4") a month up to highest readings of 175 mm (6.9"), for an average annual rainfall of about 466 mm (18.3"). Goolwa, aside from being on the coast and enjoying the influence of the Southern Ocean, is marginal, semi-arid country, and without the prosperous riverboat trade would have remained in a pocket like the upstream Cadell Tilt district, people moving back and forth around it anyway.

It is salutary here that Mount Gambier, in the higher rainfall belt further down in the extremity of south-eastern South Australia, lies at the same distance from Melbourne as from Adelaide, where Goolwa is closely proximate to the Adelaide CBD as a weekend retreat.

The arguments put forward to protect the Lower Lakes environment are predicated upon the persistent idea that they are naturally fresh water lakes, not estuarine systems like all the rest of Australia's coastal estuaries. In their natural state the South Australian Lower Lakes differ little if at all from estuaries in eastern Victoria's Gippsland Lakes, the Shoalhaven estuary at Nowra or Wallis Lake up at Forster, or at Port Macquarie on the NSW coast; in the southwest of Western Australia the Swan River as a good example, Peel Inlet, and Flinder's Bay adjacent to Cape Leeuwin on the extreme south-easterly tip of the continent.

There is an interesting story about oysters on the Swan River. The first settlers in the Swan River colony noticed the river contained hundreds of tons of oyster shells which extended into strata underlying surrounding sandy wetlands, including high shell middens indicating that local people had once feasted on them, but no live oysters. At some earlier time, the river mouth had

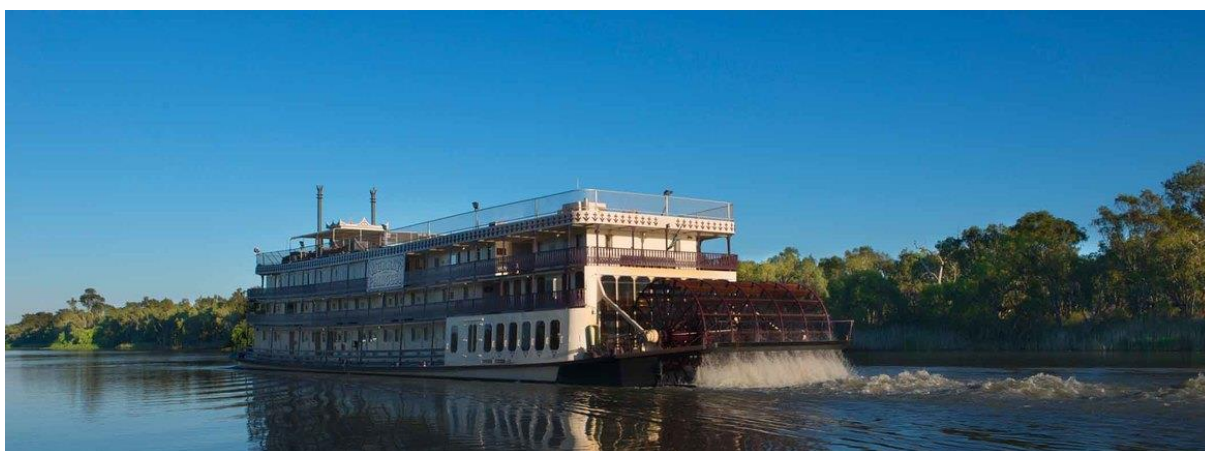
⁹¹ Webster, Adam, A Colonial History of the River Murray Dispute, *Adelaide Law Review*, Vol. 38, pp. 13-47, 2017.

silted up and the estuary became fresh, causing extinction of the oysters. A century later, from 1927 to 1956, some 3 million tons of oyster shells were dredged from the river and burned by the Swan Cement Company to make lime, used to build the modern city of Perth.⁹²

Not only humans impact on environments, nature itself impacts on environments to create niche opportunities, according to each species. Construction of the Goolwa Barrages in the 1930s to provide employment during the Great Depression had the same effect on Lower Lakes mulloway as the pre-contact sandbar at Fremantle had on Swan River oysters. Today recreational estuarine mulloway fishing in South Australia is restricted to The Coorong, on the ocean side of the Goolwa Barrages, while the Lower Lakes fishing industry is long gone.⁹³

Counter-arguments relying on anecdote and hearsay from the period insist that the Lower Lakes had always been fresh, but that since 1900 water extraction upstream had depleted Murray River flows.⁹⁴ This argument is belied by the common difficulty experienced upstream by pastoralists and steamboat crews alike being stranded by rivers drying up during prolonged drought, and the long campaign by South Australia to have weirs and locks constructed upstream to maintain water levels and with it regular trade, as often jointly funded by NSW and Victoria.

The core principle of Integrated Catchment Management, catchment scale notwithstanding, is slow the flow. Where in pre-contact times river streams were clogged with snags, sand-banks, rock and clay reefs, reed beds and vegetation,⁹⁵ steam paddle-wheelers themselves opened up the inland rivers and changed them into navigable canals after the trend throughout the industrial revolution, prior to the coming of railways and later mechanised road transport. It is sufficient that flows rapidly increased during this period, artificially freshening the Lower Lakes anyway.



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⁹² WA Now and Then, *The Mystery of the Oysters*, <http://www.wanowandthen.com/Swan-River.html>; The West Australian, *Swan Shell Beds*, 22 January 1931, <https://trove.nla.gov.au/newspaper/article/33223586>, accessed 10 July 2019.

⁹³ Primary Industries and Regions SA, https://www.pir.sa.gov.au/fishing/fishing_limits/mulloway, accessed 11 July 2019.

⁹⁴ Sim, Terry and Muller, Kerry, *A Fresh History of the Lakes: Wellington to the Murray Mouth, 1800s to 1935*, River Murray Catchment Water Management Board, 2004, http://www.gwlap.org.au/docs/A_Fresh_History_of_the_Lakes_2004.pdf, accessed 10 July 2019.

⁹⁵ MDBA, *Inland Shipping: The navigation of the Murray-Darling River System*, opera citatum.

⁹⁶ Sea Link, <https://www.sealink.com.au/sealink-south-australia-tours/adelaide-murray-river-kangaroo-island-tour/>; Murray Princess, https://www.youtube.com/watch?time_continue=1&v=2Tz7F6yDJv0; Royal Automobile Association of South Australia, <https://www.youtube.com/watch?v=vNTSnF2zHso>, accessed 11 July 2019.

Steaming merrily onward, what we are subjected to here are selective agency reports routinely contradicting one another, all ignoring the elephant in the room, not to mention the vehicle ferries at Mannum, Tailem Bend and Wellington, and the vast scale of natural fluctuation in the face of such meagre human efforts to manage climatic reality.

Once construction of the Murray weirs, locks and barrages was completed the climate cycle predictably continued to fluctuate. In 1956 and 1974 the lower Basin up to Deniliquin and Echuca, Wagga, Darlington Point, Hillston and Menindee was inundated with catastrophic floods. The task is one of controlling the weirs in an effort to manage hugely disparate drought and flood flows. The effect, and the continuing difficulty we experience in interpreting official data, and plainly the concern among such rapidly increasing human populations at so much fresh water being allowed to evaporate or run out to sea, is seen in assumptions that as late as 1892 river flows were still natural,⁹⁷ unmodified by 40 years of heavy channelling by paddle steamers. To be reliable the benchmark needs to be set at 1792, before European colonial incursion.

Impact of Man on Average Annual Flows (1892-1974) (GL/YEAR)

<i>Location</i>	<i>Natural</i>	<i>Current</i>	<i>Current as % of natural</i>
Albury	4670	5110	109
Yarrawonga	6090	4610	76
Euston	12040	5920	49
SA Border	13530	5920	44
Murray mouth	12640	4510	36

Within the broader argument, what these numbers reveal is the effect on the Basin system from the 1850s of opening the river stream beds to such considerable steamboat traffic.

Currently river flow travel times down to the confluence at Wentworth are, from Bourke on the Darling 38 days, from Gundagai on the Murrumbidgee 49 days, and from Albury on the Upper Murray 47 days. Flow from Wentworth to Lock 1 above the Lower Lakes takes 20 days.⁹⁸

This present round of disputation arose much later, on the other hand, as an artefact of the drought of 2006-2009 when the Lower Lakes dried up; a consequence of which lake-bed soils exposed to air began to acidify. Their Department of Natural Resources under Labor premier Mike Rann insisted that "drought and overuse of resources led to fresh water levels falling to more than one metre below sea level in April 2009 in lakes Alexandrina and Albert (the Lower Lakes). The effects of this included the following:

- Up to 20,000 hectares of acid sulphate soils became exposed.
- Increased salinity levels damaged the ecosystem and threatened water supplies for people and livestock.
- As the lakes dried out, wind erosion and dust created issues such as loss of soil and areas of bare ground around the Lower Lakes
- Some sections of the riverbank below Lock 1 dried out, cracked and collapsed. There were more than 160 incidents of riverbank collapse along the lower reaches of the river.

⁹⁷ <http://www.murrayriver.com.au/about-the-murray/locks-weirs-dams-barrages/>, accessed 6 July 2019.

⁹⁸ Department of Environment and Water, Government of South Australia, https://www.sawater.com.au/__data/assets/image/0003/12378/RiverMurray_Flow_Travel_Time_Map.jpg, accessed 6 July 2019.

- Unique species of native flora and fauna were under strain; for example, native species had to compete for food and space with invasive species that were better suited to the saltier environment.
- Blackwater events, which can occur naturally, worsened. Large amounts of organic matter (such as leaf litter) that are normally flushed out instead accumulated, causing oxygen-depletion in water.
- When water flowed again, acid drainage water washed into the river, making parts of the river toxic to marine and freshwater plants and animals, contaminating water supplies and corroding concrete and steel.
- It is important that the Murray Mouth remains open to maintain connectivity between the river, the Coorong and the Southern Ocean, to discharge salt and other nutrients out to sea, and to maintain healthy ecosystems in the Coorong.⁹⁹

Their 2009 submission to the newly-formed Murray-Darling Basin Authority envisaged that:

- Lake Alexandrina and Lake Albert remain predominantly freshwater and operate at variable water levels.
- The Murray Mouth is predominantly kept open by end-of-system river flows.
- There is a return of salinity gradients along the Coorong that are close to historic trends with a corresponding response in species abundance.
- There is a dynamic estuarine zone.
- The biological and ecological features that give the CLLMM wetlands their international significance, albeit a changed and changing wetland (Section 7), are protected.
- There is a return of amenity for local residents and their communities.
- There are adequate flows of suitable quality water to maintain Ngarrindjeri cultural life.
- Tourism and recreation businesses can utilise the lakes and Coorong.
- Productive and profitable primary industries continue.¹⁰⁰

Against the sheer enormity of government-sponsored Lower Murray agricultural and industrial development, these impacts are petty. Accepting and maintaining their plan over the decade since came in the face of 'remarkable turnaround' following heavy rainfall in 2016 which brought flood warnings once again for the Lower Lakes;¹⁰¹ evidencing this argument that for political reasons ideology is made to prevail over the fact of recurrent drought-flood cycles.

Yet, after further relatively dry years in 2017-2018, by June 2019 total storage in the Murray-Darling Basin as a whole fell back nonetheless down at 31%, with Border Rivers Catchment at 3-5% of capacity, Gwyder and Macquarie Catchments 6-10%, Namoi 3%, Lachlan 22-27%, Victorian tributary catchments 26-42%, Lower Darling 1%, and Hume Dam above Albury 23%,

⁹⁹ Department of Environment and Heritage, Government of South Australia, *Issues for River Health*, <https://www.naturalresources.sa.gov.au/samurraydarlingbasin/water/river-murray/issues-for-river-health>, accessed 12 July 2019.

¹⁰⁰ Department of Environment and Heritage, Government of South Australia, *Securing the Future: A long-term plan for the Coorong, Lower Lakes and Murray Mouth*, June 2010, <https://www.mdba.gov.au/sites/default/files/pubs/murrays-futures-lowerlakes-coorong-recovery-jun-10.PDF>, accessed 6 July 2019.

¹⁰¹ Dayman, Isabel, 'Remarkable turnaround in South Australia's Murray River inflows', *ABC Riverland*, 7 October 2016, <https://www.abc.net.au/news/2016-10-07/murray-flows-increase-south-australia/7912854>, accessed 11 July 2019.

the far downstream Lakes Alexandrina and Albert were maintained at 93% and 94% of the capacity respectively.¹⁰²

Such gross disparity is astonishing. Crying Heritage! far too often amid contrived alarm over 'climate change', hysterical accusations of upstream fraud and corruption, and a minutiae of nit-picking environmental detail for us to leave in abeyance, the South Australian government may well argue the Lower Lakes are part of the wider catchment. But so is the wider catchment part of the Lower Lakes. It is not Upper Darling or Southern Riverina irrigators over-extracting water from the system, but historically the Lower Murray, Whyalla and the Murray Hundreds.

This continuing preferential treatment of South Australia led by the summer of 2018-2019 to mass fish deaths throughout the Upper Darling and the Menindee Lakes involving millions of fish depleted of water as the lakes were drained to meet South Australia's demands, amidst accusations from upstream that all they were doing was maintain water levels for the Goolwa Regatta Yacht Club's conspicuously bold annual regatta week.¹⁰³ As the catchment as a whole must be involved in helping sort out South Australia's problems, ideology has its practical limitations; so must South Australia be involved in sorting out whole catchment problems.

Over the summer of 2018-2019, trying to maintain the plan, sustain the artefact, access to water sought by both upstream irrigators along the Southern Riverina and environmental flow through the Menindee Lakes in particular was denied. In place of the Murray river mouth being kept open by normal end-of-stream flows in accordance with the plan, South Australia panicked and extra water was extracted from the system via Menindee and the Barmah Choke.

In short, the plan didn't work, but instead of amending the plan they continue to blame upstream irrigators, and aside from deaths of millions of fish in the process caused massive bank erosion through the mid-Murray. The Murray Darling Basin is not household plumbing, controlled by taps and valves at the turn of hand; everything is connected, and as in all natural systems effects bounce back and forth like ripples in a pond.

As South Australia is part of the wider Murray-Darling Basin, so is the wider Basin part of South Australia. There must be give and take, not just demanding all the time merely to keep their own people happy; avoid 'distress' in their own community by exacerbating everybody else's distress, then seeking to enforce those demands with incessant onslaught of agency propaganda, 'scientific papers', ideology and imported social theory.

Life simply isn't like that. Water is not the only problem being experienced around the Lower Lakes and the Coorong, now they are proposing culling native animal overpopulation; like everyone else they too face 'overabundance' of everything annoying, from fur seals to koalas, corellas, geese, kangaroos.¹⁰⁴

Human overpopulation, rampant industrialisation, environmental decay, species rampancy, fluctuating drought and flood cycles, affect everybody alike.

¹⁰² MDBA, Water in Storage, <https://www.mdba.gov.au/managing-water/water-storage>, accessed 5 July 2019.

¹⁰³ Hunt, Peter, Fish die in Darling as SA holds back enviro water for lakes' regatta, *The Weekly Times*, February 5 2019, 9:00 pm, <https://www.weeklytimesnow.com.au/news/national/fish-die-in-darling-river-as-levels-maintained-in-sas-lake-alexandrina/news-story/9c82ce2515c98aab6d7256f3ff7d2db4>, accessed 12 July 2019.

¹⁰⁴ Neilson, Ben, Parliamentary committee wants SA government to have more power to cull overabundant species, *ABC News*, 5:00 am, July 11 2019, <https://www.abc.net.au/news/2019-07-11/animal-cull-powers-proposed-for-sa-environment-minister/11291764>, accessed 11 July 2019.

Prospects for Participatory Reform

Dispute

It is tempting to call for a stop to socialist ideology, the eternal casuistry of lawyers, the sophistry of politicians, the hysteria of media, the endless rhetoric, the damage it causes, but that would leave this writer accused of applying the same moral fervour he is calling to account. Life is real, people are the way they are; it is sufficient to point out the fact.

As former Western Australian premier Peter Dowding once remarked, once a matter has gone to court all parties have lost. Judges called to interpret legislation are a blunt instrument, a sledge hammer used to crack peanuts, only ever snowballing pay-back litigation without ever resolving the matter at hand. Lawyers like bureaucrats just don't get the nitty-gritty.

Writers have much the same problem, outside the regurgitating agency and law firm cut-and-paste templates having to sit putting all these words manually to paper, check every detail, at the rate of 10 pages a week at best, find the right sponsors, forego ethics and moral conscience. No wonder all that bullshit costs the poor suffering taxpayer so much hard-earned money.

As my Dean once pointed out to me, essay writing IS the academic discipline. None of it is science, but sitting putting endless words to paper. Science is out in the field, standing out there in the paddock watching the crops grow, ewes lambing, the cows calving, the birds laying, fish swimming; watching what's happening, making observations, taking notes.

It is far more productive in human terms for people to sit back and take a deep breath, sit and yarn, talk things over, stop and think, use their brain.

Sitting and thinking, calls for transparency and rigour aside, the matter of environmental water flows along the Basin merely to buffer the Lower Lakes from the worst of drought might as well have proceeded calmly and reasonably. Nature has its way of confounding human ambition, except that damage to the Murray-Darling system bringing forth calls for remediation is recent, within the past 100 years of national development in over 230 years of settlement. Restoration is specific and accountable.

In practical farming, maintaining the surrounding environment, it's landscapes and features including wetlands is always beneficial; mediating cyclic climate transitions and softening their impacts. There is no sensible argument against that reality, and certainly it's not an issue here.

Amid all the noise and clamour, sitting back reflecting calmly on what is actually going on, it is plain that those schemes where the immediate problems are being experienced - Coleambally, Lawson Siphon, Wakool Canal, the Lower Lakes and the Coorong created by the Goolwa Barrages in particular - were built to provide employment and utilise available manpower during the Great Depression.

These monumental works, these great paradigms of infrastructure engineering, are an artefact of nationalist zeal trying to create depression-era jobs and use up human resources during the years of drought and hardship, building triumphant visions in place of frugal, practical common sense.

These current disputes arising from them need to be addressed nonetheless; we need to step through the issues raised on their merits, one at a time.

First, Menindee is not a reserve storage for South Australia's Lower Lakes, it is the victim in all this political argie-bargie over water allocation in the Murray-Darling Basin. Foregoing yacht regattas to save millions of fish no matter how remote from so-called civilisation is a no-brainer. As the tragedy unfolded people along the Darling responded immediately, and rightly so.

Second, in replying to accusations of upper catchment over-extraction of water, inevitably Cubbie Station is invoked for the size of its privately-built water storage capacity. Cubbie Station in the scheme of things is a scapegoat, and its story is worth recounting. It is well known as the largest irrigation property in the southern hemisphere, situated on the almost level floodplains of the Culgoa and Balonne rivers near Dirranbandi in south-west Queensland. It covers 96,000 hectares of which 40% is retained as remnant native vegetation, and was converted from grazing to cotton farming in 1983.

Cubbie was developed by Des Stevenson, and after his death in 2000 was owned by his family. Their cotton farm was sent bankrupt by the Millennium Drought (1997-2009) with five years without a flow in the rivers. Cubbie went into voluntary administration in October 2009, while the catchment ironically received flooding rains in March 2010 and again in January 2011

The Darling River on average contributes 16% of the Lower Murray flow, with 15% of this contributed by the Condamine Balonne, or around 2.4 per cent of Murray flow. Forty-five per cent of this is extracted by all irrigators on the Dirranbandi Scheme, or 1.1 per cent of the Lower Murray flow. Cubbie Station itself accounts for 15 per cent of scheme extractions, 0.2% of the flow, 4.2% per cent of the total Darling River storage capacity, licenced under the Dirranbandi Irrigation Scheme on the same conditions as other irrigators.

It is a fundamental error in catchment management to assume all water necessarily drains down clearly defined stream beds. It does not. The bulk of Cubbie's water licences are high-flow flood licences; Cubbie can only store floodwater when the river is above a certain height, at which the water would not go into the river system but spread over the flood plain and never return to the river. It would soak into the ground or be lost to evaporation, never reaching the Murray River.

As a result, after prolonged drought, once its own storages are depleted Cubbie Station like all growers working in concert with the natural drought-flood cycle does not sow cotton, but relies on grazing and normal dryland cropping to remain viable as a business.¹⁰⁵ In the scheme of things Cubbie Station is a smart solution worth emulating.

Walnut growing on the Murrumbidgee and the Lower Murray by contrast does not require flood but far more frugal and efficient drip irrigation. The scale of water use on nut farms is consistent with the economic scale of the enterprise, not profligate use of water as such. Anxious Labor governments interfering in the market trying compel water efficiency measures by offering farmers inflated water buy-backs while allowing the same farmers to buy the same water back again at the lower market price, when farmers were in the process of taking those measures anyway, is part of the problem.

¹⁰⁵ Forbes, Viv, Cubbie Station is a scapegoat, *The Spectator*, Australia, 13 February 2019, 5:56 pm, <https://www.spectator.com.au/2019/02/cubbie-station-is-a-scapegoat/>, accessed 26 June 2019; Monuments Australia, *Des Stephenson*, <http://monumentaustalia.org.au/themes/people/industry/display/95484-des-stevenson>, accessed 12 July 2019.

Water allocation, once environmental flows are subtracted, like land and any other natural resource, must bring a return on the investment; the reality here is that over several decades now uneconomical small-block farmers across the country are retiring to make way for larger scale, more efficiently productive income- and export-earning agriculture capable of achieving the requisite peacetime economies. All that country broken up, all those uneconomically small cockie blocks created during war and depression, should never have been created in the first place; Australia as a nation would have been far better off without being drawn into such devastation. For that matter, without Labor's associated protectionist White Australia policy, Australia today would be a very different country.

Third, the Lawson Syphons and the extended irrigation areas along the Edward-Wakool system of Southern New South Wales are cognate with the Goolwa Barrages in South Australia; both built as they were during the years of the Great Depression essentially to carry out now state-sponsored development and make work available to chronically unemployed men, designed in haste over continued bickering between the emerging states without taking into account social and environmental impacts, or indeed attending at all to Indigenous interests.

The critical difference between the two projects in this present setting is that while the Lower Lakes are protected by the Australian Constitution as a critical strategic allowance to South Australia made in the conventions of the late 1890s, The Edward and Wakool Rivers for their part are stuck there in an administrative pocket arising from early exploration in 1831 along arbitrary river channels, and the decision in 1851 to locate the border along that southern channel named as the Murray River, while the northern channel is considered an anabranch.

The power imbalance between the Municipality of Deniliquin, located so far from Sydney; so far beyond the 19 counties while at once outside Melbourne's jurisdiction on the one hand, and the Government of South Australia on the other; inherently the same people involved, still related to each other through family, is incomprehensible. Likewise, Menindee Lakes 100s of kilometres from anywhere at all, and Cubbie Station way up there in Queensland somewhere.

Such massive loss of export income, farm production, environmental amenity, rural decline and in particular drift of young people to the cities, regardless of distance from state capitals, merely so downstream holidaying tourists can ride heritage riverboats and yacht clubs hold regattas, is unconscionable. Socially, economically, environmentally, their impacts need to be considered on their merits, separately from government agencies, embedded social division, entrenched party politics and ideological disconnect from reality.

Finally, the reality here is that Goolwa as a predominantly urban retreat is all of 80 Km from the Adelaide CBD; roughly equal given traffic to Springwood in the Blue Mountains from Sydney, and Koo Wee Rup from Melbourne, not far from where, back in 1840, my colonial forebears along that line ran cattle on a block they called Wat Will Roon, adjacent to the Narre Warren police paddock.

In the matter at hand, admittedly there are issues still being faced along the Edward-Wakool system, as there are across the entire Basin. Aside from reporting those districts in decline, the matter is less concerned with whether there are matters still needing to be addressed, but with the difficulty in the face of unrelenting media propaganda in having them properly addressed.

This writer has no issue with farmers selling their water allocations during drought when prices are high, then buying them back when the rains return and prices fall. Of course, this approach to farming as a business to run is common sense, reflecting the eternal reality of living in constantly fluctuating drought and flood cycles while buffering rural fortunes against cyclic boom and bust.

A bigger issue raised by media is more concerned with outside speculators buying up water allocations on the open market then detaching them from the land to cause economic, social and environmental harm, because they look for prices to rise while farmers look for prices to fall. There is a clear distinction in the owning of rights to use water in the Murray-Darling Basin on the one hand, and where that water is reasonably to be used by whom, and to what purpose, without impinging upon the common good.

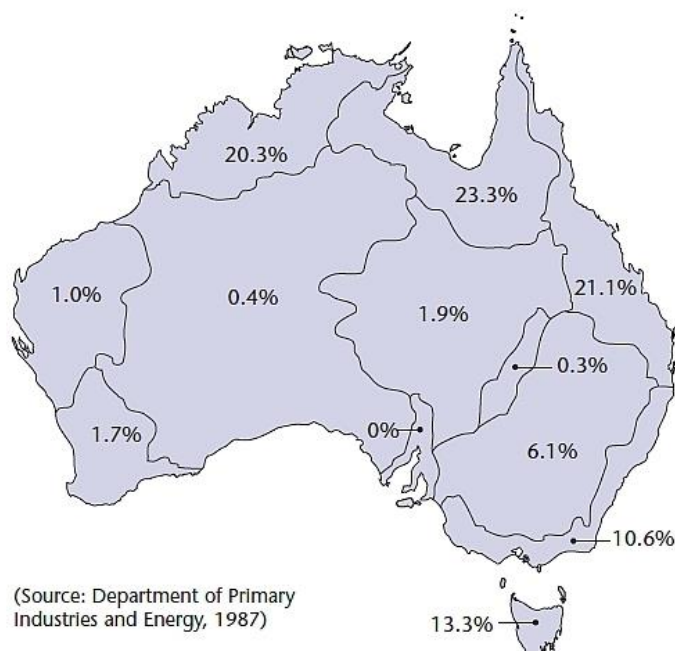
The principle is that landowners and irrigators do not have sovereignty over the property, they are licensed to use it productively, or failing to do so find it resumed by government, or squatters on it. Compensation for resumption of land is merely politic in times of peace and prosperity, not so in times of war or national emergency.

Remediation

As Permaculture guru Bill Mollison once famously pointed out, Australia does not have a rainfall problem, it has a runoff problem. Assuming Australia has a problem with water at all, it is runoff. Every scheme in the history of the country has been about managing flows.

Figure 3

Distribution of surface runoff in Australia



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¹⁰⁶ Australian Academy of Technological Sciences and Engineering, *Water and the Australian Economy*, Parkville, April, 1999 p. 12

The most fundamental principle in Integrated Catchment Management, the core principle, is to **Slow the Flow**; in practice, to obstruct streams and harvest runoff. In landscapes typical of the Murray-Darling Basin, it is irrelevant whether there are periodic water shortages due to drought, climate change, human extraction, seepage, evaporation, afforestation, farm dams, bush fires. We can deal with it, as we always have. We are blessed in that we do not suffer constant arid drought, but enjoy periodic flood events intermediated by average, 'normal' flows along both streambeds and associated groundwater through-flows, as we call them in Western Australia.

Table 1.2: Global comparison of water resources and use.⁵

Region	Available water per area	Population density	Available water per capita	Water consumed	Consumption per resource
	ML/ha	People/km ²	ML/person/year	10 ³ GL/year	%
Australia ^(a)	0.5	2.5	21.3	25	6.0
North America	2.8	20.7	13.4	603	9.9
Central America	11.2	115.7	9.6	23	2.9
Southern America	6.9	21.5	32.2	165	1.3
Western and Central Europe	4.3	107.1	4.0	265	12.6
Eastern Europe	2.5	11.5	21.4	110	2.5
Africa	1.3	32.7	4.0	215	5.5
Middle East	0.8	47.1	1.6	271	56.0
Central Asia	0.6	18.5	3.0	163	62.0
Southern and Eastern Asia	5.5	174.4	3.2	1991	17.1
Oceania and Pacific ^(b)	1.1	3.3	33.0	26	2.9
World	3.2	50.4	6.4	3832	8.9

^(a) Data from Table 1.1
^(b) Includes Australia

Ian Prosser in his 2011 report for the CSIRO, further pointed out that:

- Overall, Australia has sufficient water resources to support its current uses, consuming 6% of renewable water resources each year.
- Current use of rainfall and water resources in effect meet the needs of more than 60 million people, through Australia's exports of agricultural produce.
- A very uneven distribution of water resources across Australia and high year-to-year variability means that water resources in some regions are fully or over allocated, while others remain largely undeveloped.
- Australia's arid landscape and high potential evaporation pose challenges from the high demand for water by crops and cities, and large water losses from reservoirs and inland rivers.
- Some water resources are at risk from bushfires and unlicensed uses, which can reduce water availability to licensed users.¹⁰⁸

¹⁰⁷ Prosser, Ian, Current Water Availability and Use, in *Water: Science and Solutions for Australia*, Ian Prosser (ed.), CSIRO, 2011, Ch. 1, p. 3.

¹⁰⁸ Prosser, Current Water Availability and Use, *ibidem*, p. 1.

Australia is already good at using water frugally and productively. It is self-contradictory to proclaim bushfires and afforestation both to be risks to water; that being the case, to save water we would cut down all the trees and be done with it. Afforestation, farm dams, weirs, barrages, are not risks to water in the Basin but beneficial; acting in concert to maintain Basin hydration levels, slow the flow, and support the broad ecosystem including productive human use.

This matter is concerned with relative hydration of the landscape, in which water quality is a function of trophic consistency rather than potability; which is to say that healthy hydrated landscapes consist of nutrient loading as much as water; from barren dryness at one extreme and eutrophication at the other, all gradually flowing and seeping through landscapes to provide sustenance to successions of aquatic, riverine and estuarine communities. Other stresses on the water body including patches of acidity and salinity, and occasional oil or chemical pollution, are peripheral to core issues facing the Murray-Darling Basin water body as a whole.

As matters stand, while in a medium-low rainfall area subject to full water allocation, Southern Murray-Darling Basin has a low evaporation potential, low runoff, and a medium-low dryness index. It is not arid desert, but reasonably well served with water.¹⁰⁹ As discussed at length here above, the region is rather subject to irregular, periodic drought-flood cycles consistent with the naturally occurring effects of the El Niño–Southern Oscillation (ENSO) in particular, while the Northern Basin is affected more by the Indian Ocean Dipole, and to a lesser extent the recently discovered Madden-Julian oscillation (MJO) circulating the tropics.

A very real issue with extending irrigation so far out onto the dryer country, on the other hand; reaching too far beyond the natural extent of peak flood events, is that it likewise disconnects farmers working those blocks from their environment, ties them artificially to the managed flows of river systems some distance away, and subjects them to political decisions obliging them to engage lawyers and officialdom before they are able simply to get on with farming.

It is true that rushed, poorly designed systems constructed during the depths of depression and their aftermath have created problems as climate shifts and the general availability of water diminishes, while water resources generally remain undeveloped. Solutions lie not only in water buy-backs, but land buy-backs of chronically underutilised or unused farms on marginal country, and with it new engineering solutions to tweak faults in the old Depression-era system design; in this process rolling back those farms onto the river system then re-afforesting their old blocks.

According to Australian Bureau of Agricultural and Resource Economics and Sciences, between 2000-2001 and 2016-2017, the number of farming enterprises has fallen anyway from about 140,500 to 85,000 while the average broadacre farm size has increased from about 6,000 to 7,000 hectares. Decommissioning of irrigation infrastructure is underway; Riverina farmers especially selling their water allocations deciding to quit farming.

After examining over 180 years of colonisation and development along the Southern Murray-Darling Basin, shaking out as much evidence as can be mustered, what remains in these disputes is this obsession South Australians have with their barrages across a broad ocean-facing estuary, closing it off from normal daily tidal fluctuation as nowhere else in Australia. They complain too much, and give their game away.

¹⁰⁹ Prosser, Current Water Availability and Use, *ibidem*, p. 6.

Let's recap, get all this in perspective. For comparison, the surface area of salt-water Sydney Harbour is 55 Km², with a high tide volume of 562 GL for a surrounding human population of 5 million people. The Lower Lakes in South Australia, the elephant in the room with an entire state population of less than 1.7 million people, cover 821.7 km² or 15 times the surface area of Sydney Harbour, with average depths of around 1.2m and 1.4m respectively. Together they hold some 2,200 GL of water, or about four Sydharbs, yet evaporate some 700-800 GL a year or close to 140% of the volume of Sydney Harbour, of fresh water extracted politically from the Murray-Darling System. The Coorong below the barrages by comparison covers 216 Km².¹¹⁰

State heritage aside, the contemporary Lower Lakes above the Goolwa Barrages are no more than gigantic evaporation pans systemically depleting the Murray-Darling Basin of fresh water, while delivering no clear economic, social or environmental benefit at any time in its history.

Documented reports of algal scums and discoloured water in the Lakes estuary go back to at least 1853, with the first detailed scientific account of toxic cyanobacteria appearing in the scientific journal *Nature* (Francis 1878).¹¹¹ In 1853 the Hundred of Murray was proclaimed as farmland, with boundaries extending two miles each side of the Murray River to include all that land around Lakes Alexandrina and Albert.¹¹²

As we have seen, in 1853 the paddle wheelers also started operating, pushing their way through riverine reed-beds, sandbars, snags and obstructions to form navigable river channels to enable South Australia's lucrative river trade to get underway, before the coming of railways and road transport, back in the days when drovers were moving stock up and back looking for pasture and water; well before extraction for irrigation began upriver, which didn't start until the arrival of steam engines to drive the pumps from around the 1850s, with railway engines close behind.

Before the Lower Lakes barrages were built, tidal effects and the intrusion of seawater occurred during periods of low flow into the Lower Lakes and in the River Murray, affecting at times up to 250 km upstream from its mouth, though South Australia insists nonetheless the Lower Lakes were 'predominantly fresh'. They argue further that although "this effect was a normal part of the variation of the lower river system, the impacts were further intensified by increased regulation and upstream diversion of water that decreased periods of high flow along the lower Murray, and reduced overall flows to the Lower Lakes."

*In 1931, the then River Murray Commission decided — after extensive investigation — to construct 5 barrages to help manage lake levels and improve water quality in the lower Murray and Lower Lakes system. Work on the Barrages commenced in 1935 and was completed in 1940. South Australia's Engineering and Water Supply Department undertook the work, with the costs shared equally by the governments of South Australia, Victoria, New South Wales and the Commonwealth.*¹¹³

¹¹⁰ Stone, Dylan, Palmer, David, Hamilton, Ben, Cooney, Cathy and Mosley, Luke. *Coorong, Lower Lakes and Murray Mouth water quality monitoring program 2009-2016*, Summary Report, Department of Environment, Water and Natural Resources, Government of South Australia, June 2016.

¹¹¹ Stone et alia, *Coorong, Lower Lakes and Murray Mouth water quality monitoring program*, *ibidem*, p. 15.

¹¹² Leadbeater, Maureen M., *Counties and Hundreds, South Australia*, Family History South Australia, <https://www.familyhistorysa.org/sahistory/hundreds.html>, accessed 13 July 2019.

¹¹³ MDBA, *Lower Lakes Barrages*, <https://www.mdba.gov.au/river-information/running-river-murray/lower-lakes-barrages>, accessed 10 July 2019.

The subsequent MDBA Fact Sheet, *All About the Barrages*, fails to help much beyond outlining the dilemma;¹¹⁴ like all bureaucracies not being quite as forthcoming as they might, declining to discuss the considerable duress and expense incurred in constructing the barrages in the first place, failing to take leadership, and leaving solutions to be negotiated among affected parties when the fact remains that successive South Australian governments in their post-war zeal for industrialisation created their own problem; demanding in the process the Commonwealth, New South Wales and Victoria share the costs.

When it comes to national emergency affecting everybody alike, there are Commonwealth powers to intervene. In common law too, adversarial jurisprudence supposes that issues are a matter between parties to sort out among themselves, with courts of law on hand only to mediate and determine those matters either party is unable or unwilling to concede. People unable to make decisions, in short, have decisions made for them; Nature may ultimately have her own way. The question remains of how much this persistent refusal to arrive at agreement is going to continue costing the nation; not only financially but in how much more damage it will inflict.



Firstly, the Goolwa Barrages do not need to be removed in their entirety, merely opened to tidal flow like the Peel Inlet at Dawesville allowing the ocean itself to maintain environmental water levels, flush the estuary of hyper-salinity and excess nutrient load to keep it fresh and healthy, with an added bonus in restoring the local mulloway fishing industry; in its day employing over 100 local fisher families.¹¹⁵

¹¹⁴ MDBA, *Fact Sheet: All about the barrages*, <https://www.mdba.gov.au/publications/brochure/fact-sheet-all-about-barrages>, accessed 6 July 2019.

¹¹⁵ Lakes Need Water, *Lower Lakes Fact Sheet*, <http://www.lakesneedwater.org/home>, accessed 5 July 2019.

Nowhere else in Australia are coastal estuaries closed off from ordinary tidal influence, despite in many cases dense human settlement in the same vicinity. The South Australian Lower Lakes differ little from coastal estuaries in eastern Victoria's Gippsland Lakes; the Shoalhaven estuary at Nowra, Wallis Lake up at Forster, Port Macquarie, all on the NSW coast; or in the southwest of Western Australia the Swan River as a good example, Peel Inlet, and Flinders' Bay.

In the case of Peel Inlet in Western Australia, opening the Dawesville Cut south of Mandurah was financed by residential development without ill-effect; to the contrary, it restored the health of the estuary. Calculations for siting the Cut were provided by doctoral work in mathematics by colleagues on estuarine currents at the Centre for Water Research at the University of Western Australia.

Secondly, Goolwa Regatta Yacht Club insisting on fresh water for its regattas is no different from Royal Perth Yacht Club, Royal Freshwater Bay Yacht Club or Mounts Bay Sailing Club on the saline-brackish Swan River, surrounded as they are by a city whose population exceeds that of the entire state of South Australia, and which without constant dredging would as likely have silted by up by now and become a meadow.

Goolwa yachties sailing on natural tidal salt water will have the effect of making their regattas more interesting; drawing larger crowds, while challenging their yachtsmen, as those who call themselves yachtsmen should by definition be challenged by the vagaries of wind and tide.



MDBA argument against construction of a weir at Wellington - Weir 0 if you will - to manage fresh water flows along the Lower Murray independent of the Lower Lakes, is that such a project is technically challenging and expensive;¹¹⁶ which oddly enough didn't prevent the barrages

¹¹⁶ MDBA, *Fact Sheet: All about the barrages*, *ibidem*, p. 5

facing the same overly ambitious technical difficulties and the same political objections from being constructed; so long as somebody else paid for it, on massive overseas borrowings.

The same dilemma grew over time in the Australian motor industry; essentially low-efficiency assembly lines which degraded work skills and regimented working people like the Lower Lakes reduce the environment, and left the resulting deficiency subject to the caprice of union bosses and party faction leaders.

The further point to be made here is that storage capacity of the Lower Murray navigable channel below the confluence of the Darling and Murray at Wentworth is massive; around 2,500 GL over 650Km in length, and not problematised by the 700-800GL annual evaporation from the shallow estuarine spread of the Lower Lakes. The Lower Murray channel about 240m wide at Wellington, 16m deep in places, compares to Yarrawonga Weir maximum of 15m, and Hume Dam's 40m, with a fall of only 2.5 cm per kilometre over the last 160 kilometres to the sea.

A solution to these ongoing neglects passed off by bureaucrats as administrative dilemmas is to split the Murray-Darling Basin Authority into separate management and compliance agencies, each required to liaise and collaborate directly with their constituency. This would help a great deal by resolving their own internal dilemmas, free stakeholders to get on with talking sensibly to one another, and not least restore a measure of public trust in the proceedings.

Community

Further criticism of MDBA lies in their dismissing grassroots participation, ignoring non-flow variables in ecological restoration, failing to monitor key water quality indicator species like fish, dismissing local community activity in maintaining their own local ecosystems.¹¹⁷ This writer himself served seven years during the 1990s on the Council of the WA Land Management Society, holding field days and demonstrating to families across the WA Wheatbelt how to carry out routine environmental data acquisition, collaborate with state government agencies, and develop standardised procedures consistent with state database quality assurance standards.

Across regional Australia people routinely travel very long distances and move around a great deal, not only for work and education but typically to play football and netball of a weekend, or merely to do some holiday shopping. Such widespread travelling about tells us is not that they are disconnected; to the contrary, that like Indigenous peoples their inherent cognitive processes embrace vastly extended patterns of relationship, socially, economically and environmentally, across vast landscapes, as distinct from binary social structures and administrative dichotomies arising from imported sociological theory; bringing with them gross distortions in remoteness and alienation, adversarial justice and political opposition.

Farmers, Indigenous groups, towns and communities along the Southern Murray-Darling Basin in particular are related to each other by kinship as well as long-standing business relationships, travel back and forth about the various districts, yet required to frequently cross state borders and negotiate separate jurisdictions as they go about their normal lives. While state governments may not collaborate in such a broad sense, regional bioregions with their riverine ecologies and floodplains alike are intimately connected, bound together, and there is no reason inter-agency

¹¹⁷ Conallin, John, in Mike Foley, Basin Authority blind to bigger picture, *The Land*, 17 November 2017, <https://www.theland.com.au/story/4297328/basin-authority-blind-to-bigger-picture/>, accessed 25 June 2019.

collaboration cannot be implemented along those lines in place of political and jurisdictional silos dominating artificially reckoned partitioning.

Farmers like Indigenous elders are deeply embedded in their respective landscapes, and indeed there are many country and bush people alike taken through law and given skin, and a proper name in language. Since the early settlement period, despite widespread killing on both sides, as often somebody settling on land would become custodian of *tjuringa* and sacred sites in return for their use of the land, with their grandchildren and great-grandchildren still carrying on the responsibility. Such stories are legion outside the universities and halls of power.

Let's not imagine such profound differences exist between farmers and their local Aboriginal communities; it simply remains that people too much alike tend to conflict because they compete for the same ecological and economic niche. With High Court recognition and granting of Native Title much of the historical antagonism has evaporated, telling us that problems among the communities typically resulted from bad legislation rather than innate antipathy.

Neither are farmers, pastoralists, graziers, Indigenous elders and law bosses alike inherently ignorant, lacking education or deep knowledge of their embedded landscape. Over many years, the first part of resolving conflict lies in recognising commonality, similarity, shared values and common interest, deep knowledge and long experience; filtering out those issues needing to be addressed then tackling them in an orderly constructive manner.

Once we recognise farmers and elders, country people alike as essentially businessmen making complex decisions on a day-to-day basis, practicing complex logistics as they plan and go about managing their affairs, what emerges is not that they are ignorant, obtuse, but that they are busy.

Our experience with the Land Management Society in Western Australia; liaising between the Centre for Soil Science at the University of Western Australia, the Department of Agriculture and the Local Landcare Groups, determined that rather than overburden the working farmer we recognised that their kids are studying Science subjects at school, and the mother well-educated, thoughtful and as committed to the well-being of the land as to her family.

Development of our farm monitoring kit based in that case on Natalie Hunt and Bob Gilkes' *Farm Monitoring Handbook*¹¹⁸ thus consisted of two separate sampling kits; the Paddock Kit allowing the farmer to take soil and water samples during his normal working day as he went around the farm, taking note of what's happening anyway; and the Kitchen Kit allowing the family to test samples for acidity for example, salinity, eutrophication and other observations, while tallying rainfall, soil moisture, waterlogging, compaction, ground cover, species counts.

The program was implemented only partly through organised field days but informally through bus trips, standing out in the paddock with farmers whose property we were invited to visit. The process became a substantial family- and community-building exercise across some 97% of the WA Wheatbelt, over a sustained period building good relations between farmers, government agencies and universities, and in the process tying farm business and with it the rural economy as a whole back to the natural cycles and rhythms; which is what this writer found substantially missing in these persistent conflicts along the Murray River Basin in particular.

¹¹⁸ Hunt, Natalie and Gilkes, Bob, *Farm Monitoring Handbook: A Practical Down-to-Earth Manual for Farmers and Other Land Users*, Crawley: University of Western Australia Press, 1992.

Farm- and rangeland environment monitoring today is highly sophisticated, as is agricultural supply-line assurance alongside advanced farming techniques including Natural Sequence, Holistic Management, Organics, Biodynamics, Permaculture, hunting and fishing, and not least traditional farming practice anyway.

Research methodology is well-established, ethics of engagement and participation clearly understood, results long documented and accessible. As discussed above, the predominant failure of the Murray-Darling Basin Authority and their political masters over the 10-12 years of its existence lies in their sustained refusal to access the human resources available to it across the Basin as a whole; treating the people not as constituents but political adversaries.

At the bottom line, people talking to one another is ordinary, requiring no special qualification or exceptional skill-set; it's when agencies fail to do so, when partisan intellectuals, academics and bureaucrats lock themselves in silos publishing interminable reports, that we run into trouble.

Political dogma separating people from one another and from their natural environment, on the other hand; treating humans as a species very differently from other species, somehow separate; treating them as antagonists, as Other; refusing to deal equitably with fellow human beings in favour of state-sponsored, late-modern industrial fervour sustained by revolutionary ideology and abstract social theory, has catastrophic consequences.

Conclusion

The vast drought and flood-prone riverine plains of south-western New South Wales have never been colonised successfully by land speculators financed by merchant banking syndicates on the one hand, nor by government-sponsored small farm subdivisions on the other, but from the mid-colonisation, post-convict period by large extended pastoral establishments ranging their flocks and herds over the wide area, to benefit from cyclic availability of water and grazing.

Their patterns of transhumance according to seasonal and climatic conditions are remarkably akin to those of now similarly incorporated Indigenous nations, seasonally taking place likewise in the colonial southwest of Western Australia and most other parts of the Australian continental expanse.¹¹⁹

Over the chronologically short period of settlement the country was flooded with mass migration essentially from revolutionary and war-torn Europe, which spilled out the same way into the Americas and southern Africa, not only among British colonies but all of European colonial expansion during the same period.

Dating essentially from the period of nationalist post-federation development of Australia, public policy became divided between practical, grounded, enlightened responsiveness to the broad landscape with its vagaries of weather and climate demanding a frugal opportunism to irregular good seasons, and abstract social and political theory imported from Europe and North America which forced industrial-scale change on those same landscapes.

During the 20th century, over the long period of transition from British colony to nationhood, Australia's population continued to grow apace, while the inherently wealth-producing Southern Riverina was successively depleted by foreign wars, economic depression, excessive subdivision of farmland and with it chronic overproduction, loss of markets and unstable commodity prices, during which the broad regional decision-making process was alienated and appropriated to state and federal capitals where it became distorted by political division, ideology and abstraction; that obtuse abstraction arising from blindness to the empirical fact that humans as a species are in rampancy; that if we were rabbits there would be a major eradication program underway.

In those circumstances, following the Great War of 1914-1918, through the Great Depression of the 1930s and the Second War of 1939-1945, state governments responded anxiously to growing urgency to gainfully employ the mass of immigrant population continuing to flood into the country. Rather than seeking investment on the basis of market demand and clear economic returns gained in prosperous trade, governments continued their massive overseas borrowing to finance complex, ambitiously high-modern, large-scale engineering works in defiance of natural climatic variability and constantly shifting weather patterns.

Over the same period Australia's climate continued to shift, whether through change or mere variability for whatever reason, leading to reduced inflows into the Southern Murray-Darling Basin system. This created further stress on Basin irrigation and storage systems, until by the summer of 2018-2019 open conflict broke out among affected stakeholders.

¹¹⁹ Hardwick, Gil, *Working the Capes*, 2002, *opera citatum*.

Stakeholders have not been divided merely by competition for scarce resources in the face of constantly growing demand, but by state borders and entrenched interstate rivalries, and in particular by deeply-embedded partisan animosity informed by radical fervour, industrialised economics, political ideology and academic social theorising along putative class lines.

There is no free lunch. Borrowed money always must be repaid with interest, and in the event where unions and Labor governments failed to extract the extra finances directly against wool sales and agricultural exports, through the mining booms of the late 20th century they borrowed against future productivity, draining regional resources through taxation after the fact in order to repay the massive overseas loans.

If those late high-modernist engineering mega-developments financed by sovereign debt had been economically viable; those grand Titanics now hitting icebergs, today the rural districts they served would be booming, when they are not they are in continuous decline.

Traditionally, competition over scarce resources, among Indigenous and pastoralist peoples alike, was managed by both seasonal and periodic transhumance responding to irregular rain and drought-flood cycles; in this case influenced by familiar El Niño–Southern Oscillation (ENSO), Madden-Julian Oscillation (MJO) and Indian Ocean Dipole (IOD) cycles recurring across the Pacific and Indian Oceans respectively.

Indigenous and pastoralist societies everywhere cast about for water, hunting and grazing in good years, then habitually follow the water back in toward their home base as the county dries back. Even then, local economies shift over time and land use is renegotiated depending on how many mouths there are to feed among the various bands and extended families.

Rural societies are not fauna being discovered by scientific explorers in exotic landscapes. Their methods are not evolutionary but adaptive strategies; surpassingly clever at times, sustainable, well thought-out and highly productive. Likewise, dryland crops sown in hope of good rains but accepting lower yields when rains fail anyway, and with it harvesting irregular flood waters to buffer against recurring drought.

This regular connection with the natural cycles was disrupted during the 20th century by absentee administrative decisions informed by imported theories and ideologies, financed by sustained national war-time indebtedness. What has been lost in that process is broad awareness of the historical relationships between land use, land tenure, and political economy across the inland generally, in particular misinforming practical solutions.

Resolving competition for land and water is but one small part of the matter in addressing these ongoing dilemmas concerning the Southern Basin; the major part lies in restoring adaptive social organisation and with it consistent generational succession over the long term. Although pastoral land use patterns inevitably alter over time in response to the shifting political economy, mobility and flexibility are required to sustain productive landuse in harsh variable climates, as does locally informed management and use of common lands. That's the first thing.

The second thing is that it nonetheless remains desirable, and is certainly productive, to harvest water in times of flood and redistribute it as the good years recede. In that respect, projects like Cubbie Station are exemplary; properly licensed and operating privately beyond the purview of bureaucrats and absentee decision-makers; responsive to the seasons and to climatic variation.

Against that wider economy, while state boundaries will no doubt remain into the foreseeable future, taking a social-bioregional approach extending across jurisdictions consistent with the way stakeholders have always moved through the broad landscape, has greater potential to form working partnerships in place of rivalries, and find common cause toward addressing common problems.