'FEAR THE HOSE': an historical exploration of sustainable water use in Perth gardens in the 1970s

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Abstract

Most of Australia's capital cities and towns have been on water restrictions since at least 2007. As metropolitan and regional water supplies continue to dwindle in the southern regions of the continent, water managers will impose tighter conditions on the use of limited resources. It is thus important to examine human attachments to their outdoor spaces to better understand how residents will potentially respond to such policies. For policies designed to reduce the domestic consumption of limited resources to succeed, Australians must perceive them as equitable in both their design and outcome. An historical perspective on contemporary sustainability issues such as water scarcity is useful to explain how present-day values and behaviours towards resource use have been formulated, shaped and renegotiated by those experiences of preceding generations. As outdoor water use is an important focus of current water efficiency measures, a more nuanced understanding of the meanings historically invested in certain gardens can provide insights into how residents can react to disruptions in their watering routines. Using 1970s Perth, Western Australia as a case study through which to analyse such reactions, I argue that the water efficiency measures enacted by the then Metropolitan Water Board overlooked the variety of socio-cultural meanings attached to suburban gardens and as a consequence, affected households unequally.

Article

Most of Australia's capital cities and towns have been on water restrictions since at least 2007.[2] Of these cities, the residents of Western Australia's capital city Perth arguably suffer least as the restrictions are less severe and the State Government has invested heavily in alternative sources of water supply. As metropolitan and regional

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[2] A. Wahlquist, (2008) *Thirsty Country: options for Australia*, Crows Nest, NSW, Allen & Unwin, 14.

water supplies continue to dwindle in the southern regions of the continent, water managers will impose tighter conditions on the use of limited resources. It is thus important to examine human attachments to their outdoor spaces to better understand how residents will potentially respond to such policies.

Numerous accounts of flaring suburban passions over sprinkler bans in recent years suggest that stricter controls on domestic water use might lead to conflict in local communities. What is it about watering our gardens that agitates neighbourly relations? Such conflicts appear motivated by perceptions of injustice and inequity arising from the disruption of everyday garden watering routines. Yet for policies designed to reduce the domestic consumption of limited resources to succeed, Australians must perceive them as equitable in both their design and outcome. As the chief executive of the Western Australian Water Corporation said in regard to the management of Perth's water supplies, '[w]e don't want a situation where only the rich can afford to have gardens'.[3] There is a substantial body of literature on the economic inefficiencies of water restrictions, which portrays volumetric water pricing as a more favourable alternative.[4] In spite of this evidence, water restrictions have remained in use as increasing the price of water is politically unpalatable. If water restrictions are to remain a tool of water demand management, then the wider socio-cultural impact of such restrictions requires further examination.

An historical perspective on contemporary sustainability issues such as water scarcity is useful to explain how present-day values and behaviours towards resource use have been formulated, shaped and renegotiated by those experiences of preceding generations. Historically the suburbs have been sites of inequity in terms of the overt display and performance of each household's socio-economic status, recreation activities, and cultural heritage.[5] Residential water use has contributed to the

[3] Interview with G. Hutchinson, (2008) 720ABC Perth, 12/11/2008.

[4] For example, D. Brennan, S. Tapsuwan and G. Ingram, (2007) 'The welfare costs of urban outdoor water restrictions', *Australian Journal of Agricultural and Resource Economics*, vol. 51, no. 3, 243-61; R. Q. Grafton and M. B. Ward, (2008) 'Prices versus rationing: Marshallian surplus and mandatory water restrictions', *Economic Record*, vol. 84, Sept, S57-S65; N. Hughes, A. Hafi, T. Goesch and N. Brownlowe, (2008) *Urban Water Management: optimal pricing and investment policy under climate variability*, ABARE research report 08.7, Canberra.

[5] B. Badcock, (1995) 'Towards more equitable cities: a receding prospect?', in P. N. Troy (ed.), *Australian Cities: issues, strategies and policies for urban Australia in the 1990s*, Melbourne, Cambridge University Press, 197.

maintenance of such practices, particularly in the garden. Indeed, over half of Perth's domestic water use is consumed outside the home.[6] As outdoor water use is an important focus of water efficiency measures, a more nuanced understanding of the meanings historically invested in certain gardens can provide insights into how residents can react to disturbances in their watering routines and gardening preferences. Using 1970s Perth as a case study through which to analyse such reactions, I argue that the water efficiency measures enacted by the then Water Authority had unequal impacts on Perth households, as some could not afford to implement garden strategies that might have allowed them to maintain the socio-cultural meanings of their preferred garden style.

An environmental history approach

The field of environmental history provides a lens through which to examine the interaction of humans with 'natural' resources such as water. Environmental history examines the changing relationships between humans and their environments over time. The field of inquiry emerged in Australia during the 1970s, closely tied to the growing environmental consciousness of the time.[7] Since the mid-1990s, prominent Australian environmental historian Steven Dovers has encouraged his colleagues to engage more closely with the contemporary sustainability agenda in their histories. According to Dovers, environmental historians should investigate not only the past of environmental issues but should 'construct histories, establish baselines, and identify long-term trends' in the relationships between humans and natural systems.[8]

Environmental history can provide an important guide for environmental policy, as current policy is the product of the 'knowledge and constraints constructed in the past'.[9] Yet cultural and historical analyses of domestic water consumption have only recently

[6] M. Loh and P. Coghlan, (2003) *Domestic Water Use Study in Perth, Western Australia 1998-2001*, Perth, Water Corporation, 9.

[7] S. Brown, A. Gaynor et al., (2008) 'Can environmental history save the world?', *History Australia*, vol. 5, no. 1, 03.2.

[8] S. Dovers, (1994) 'Sustainability and "pragmatic" environmental history: a note from Australia', *Environmental History Review*, vol. 18, no. 3, 22.

[9] K. Hussey and S. Dovers, (2006) 'Trajectories in Australian water policy', *Journal of Contemporary Water Research & Education*, vol. 135, 37.

emerged as an alternative to the more scientific approaches, which many water management authorities still employ.[10] In water management literature, humans have been traditionally reduced to faceless consumers existing in a historical and cultural void.[11] As a result of this undifferentiating approach, water efficiency measures are imposed regardless of the consumer preferences for how, when, where and why individuals use water.[12] If the notion of 'environmental sustainability' refers to 'sustaining the environment and also the Australian society that depends upon it', further investigation into the relationships between human and natural systems is required.[13] This environmental history therefore examines the values that Australians have historically held on water use around their homes and gardens since at least the 1970s.[14]

Solidarity in the suburbs

A guiding principle of the policy discourses of sustainability and sustainable development is that policy outcomes must be moral and ethical for human and nonhuman stakeholders such that they ensure both intra- and inter-generational justice and equity.[15] As the suburbs are where most Australians live, it is important to explore how these policies affect our urban environments. Brendan Gleeson has written widely on the need to mould Australian cities that are both socially and ecologically adaptive.[16] He describes these characteristics as essential to 'urban resilience', 'an evolving social-

[10] These works include, L. E. Askew and P. M. McGuirk, (2004) 'Watering the suburbs: distinction, conformity and the suburban garden', *Australian Geographer*, vol. 35, no. 1, 17-37; Z. Sofoulis, (2005) 'Big water, everyday water: a sociotechnical perspective', *Continuum*, vol. 19, no. 4, 445-83; and F. Allon and Z. Sofoulis, (2006) 'Everyday water: cultures in transition', *Australian Geographer*, vol. 37, no. 1, 45-55.

[11] G. Karksens, (2007) 'Water dreams, earthen histories: exploring urban environmental history at the Penrith Lakes Scheme and Castlereagh, Sydney', *Environment and History*, vol. 13, 118.

[12] Sofoulis, (2005: 456).

[13] T. Griffiths, (2007) 'The humanities and an environmentally sustainable Australia', *Australian Humanities Review*, vol. 43, <http://www.lib.latrobe.edu.au/AHR/archive/Issue-December-2007/EcoHumanities/EcoGriffiths.html>, (Accessed: 10/4/2008); Dovers, (1994: 21-36).

[14] Wahlquist, (2008: 8).

[15] S. Dovers, (1996) 'Sustainability: demands on public policy', *Journal of Public Policy*, vol. 16, no. 3, p. 312.

[16] B. Gleeson, (2007) *The endangered state of Australian cities: climate threat and urban response*, Urban Research Program, Brisbane, Griffith University; B. Gleeson, (2008a) 'Waking from the dream', *Griffith Review: Cities on the Edge*, Winter, 13-49; B. Gleeson, (2008b) 'Waking from the dream: an Australian perspective on urban resilience', *Urban Studies*, vol. 45, 2653-68.

ecological system, [which] suggests the primacy of contemporary social and ecological imperatives over moral or aesthetic conceptions of urbanism'.[17] In addition to encouraging policymakers to accept ongoing change and to set modest targets for urban planning, Gleeson argues that equity, fairness and equality are central to building resilient urbanism.[18] This argument is founded not only on social justice theory but also on 'mounting evidence that equity restrains environmental degradation and reduces social exposure to ecological risks'.[19] Indeed, ensuring that the burden of environmental responsibility is shared fairly fosters a sense of solidarity in working towards a common goal. When some households face greater sacrifices than others, conflict and competition arise over environmental resources. In this historical case study, I explore how the introduction of water efficiency measures in 1970s Perth highlighted and reinforced socio-cultural differences in the suburbs, thus undermining the possibility of a cooperative approach to reducing suburban water use.

Water use in 1970s Perth

In his 1970 book *Swan River Landscapes*, George Seddon warned Western Australians to 'fear the hose', as 'once you start using the hose, your garden becomes dependent on it, and you are hooked forever'.[20] In doing so, Seddon recognised the reputation of Perth householders for their relatively high water use, with the domestic sector using nearly half of the total scheme water consumed.[21] About 60 per cent of this water was used outdoors. Meanwhile, the wave of environmentalism of the 1960s and 1970s influenced many Western Australians, who began to express concern for such problems as landscape degradation, water catchment pollution, and deforestation. Yet these environmental issues remained spatially and politically external to the domestic sphere of the home and garden. As Robin Boyd remarked, 'The bush is so far removed from the European image that one cannot contemplate attempting to come to terms with it in

[17] Gleeson, (2007: 4, 5-7).

[18] Gleeson, (2007: 6-7); Gleeson, (2008b: 2659).

[19] Gleeson, (2008b: 2659).

[20] Cited in G. Seddon, (1995) *Swan Song: reflections on Perth and Western Australia 1956-1995*, Nedlands, Centre for Studies in Australian Literature, University of Western Australia, 30.

[21] Metropolitan Water Authority (MWA), (1985) *Domestic water use in Perth, Western Australia*, Leederville, WA, Metropolitan Water Centre, 11.

suburban society'.[22] Also separate were Perth's dry weather conditions and low water supplies.

The possibility of a metropolitan water crisis received heavy coverage in the local media, yet the problem of water scarcity appears to have been excluded from the emerging environmental consciousness. This construction of the domestic area as a private space reflected an historic Western attachment to the idea that the home should serve as an autonomous 'private Eden'.[23] In this suburban idyll, the family could 'claim the benefits of the modern technological order while living at least partly beyond its reach'.[24] As the environmental problems associated with this order were dissociated from domesticity, and responsibility for them abdicated, so too were possibilities for the resolution of such collective problems, including water scarcity.[25] If neither home nor garden were seen as connected to 'nature', water use in these spaces was arguably considered to have few repercussions for the wider environment.[26] This sanctity of the domestic space was thus threatened by the implementation of water restrictions and the introduction of 'pay for use' water rating.

Over the course of the decade, Perth faced the most severe and extensive water restrictions of the capital cities.[27] Due to a series of unusually dry winters and hot

[22] R. Boyd, (1970) *The Australian Ugliness*, revised ed., Ringwood, Vic., Penguin Books, 95.

[23] A. Davison, (2006), 'Stuck in a cul-de-sac? Suburban history and urban sustainability in Australia', *Urban Policy and Research*, vol. 24, no. 2, 203-204.

[24] Davison, (2006: 210).

[25] S. Dovers and J. Handmer, (1992) 'Contradictions in sustainability', *Environmental Conservation*, vol. 20, no. 3, 219-20. See also, G. J. Syme, Q. Shao, M. Po, and E. Campbell, (2004) 'Predicting and understanding home garden water use', *Landscape and Urban Planning*, vol. 68, 121-127; S. C. Thompson and K. Stoutmeyer, (1991) 'Water use as a commons dilemma: the effects of education that focuses on long-term consequences and individual action', *Environment and Behaviour*, vol. 23, no. 3, 314-18; T. Kurz, (2002) 'The psychology of environmentally sustainable behaviour: fitting together pieces of the puzzle', *Analyses of Social Issues and Public Policy*, vol. 2, no. 1, 258-67.

[26] A. Gaynor, (2006) *Harvest of the Suburbs: an environmental history of growing food in Australian cities*, Crawley, WA, UWA Press, 130.

[27] Melbourne had some restrictions in the late 1960s and early 1970s; Sydney households were relying on the newly built Warragamba Dam; and in Brisbane, residents were more afraid of floods than drought, and besides, many homes did not even have water meters at this time. Melbourne - C. Roberts, (2000) 'A history of dry arguments', *The Source*, Issue 8, June, <http://thesource.melbournewater.com.au/content/archive/june2000/history.asp>, (accessed: 6 June 2008); Sydney - P. N. Troy, D. Holloway and B. Randolph, (2005) *Water use and the built environment: patterns of water consumption in Sydney,* Kensington, City Futures Research Centre, University of New South Wales, 5; and Brisbane - P. Spearritt, (2008) 'The water crisis in southeast Queensland: how desalination turned the region into a carbon emission heaven', in P. N. Troy (ed.), *Troubled waters: confronting the water crisis in Australia's cities*, Canberra, ANU E-press, 19-36.

summers between 1976 and 1980, Perth's domestic water users were under voluntary and enforced restrictions on their water consumption for the equivalent of over three years. Furthermore, in 1978, a 'pay for use' or 'user pays' rates structure was introduced as the previous system provided no incentive for consumers to conserve water. The new system involved a fixed charge for each household, an allowance of 150 kilolitres (kL) per annum, and a further charge for each kilolitre used in excess of the allowance.[28] It represented a departure from long-established practices applying in other Australian states at the time, where scheme water was allocated according to the annual rateable value of the property.[29]

In the space of just two years, restrictions and the introduction of 'pay for use' combined to almost halve the annual scheme water use of Perth households, from 508 kL in 1975/76 to 288 kL in 1977/78.[30] Total water use also remained below the levels experienced before these measures were introduced, even though the number of services supplied by the Metropolitan Water Authority (MWA) had increased by over 20 per cent during the period.[31] These outcomes show that when scheme water 'costs more', the rational householder uses less. And the site of this newfound economy was the garden. Indeed, by the end of the decade, the water consumption situation in Perth had reversed: households now used more water inside the home than outside.

The reception of Perth householders to the imposition of these water efficiency measures was mixed. This feedback can be found in the 'Letters to the Editor' columns of the major metropolitan newspapers. Some congratulated the authorities on encouraging water conservation, while others complained that the measures were not fairly implemented and that they were detrimental to their gardens and lifestyles. The success of these outcomes in reducing water use led the MWA and CSIRO to undertake

[28] MWA, (1985: 52).

[29] In Perth, the cost of scheme water had increased very little since the 1960s. In 1960/61 it was 5.33c per kL: in 1973/74 it was 6.15c. Although property values and cost of goods, services and wages generally had increased considerably over the period, the price of excess water had not kept pace with these. In 1963, South Australian engineer J. R. Dridan observed, 'By raising annual water rates without a corresponding increase in water prices, water authorities throughout Australia have defeated their own ends by encouraging high consumption and incurring heavy capital commitments on the provision of new sources of supply to meet this high consumption'. See, H. E. Hunt, (1975) 'Address', *Proceedings of Seminar H_2O: Domestic extravagance*, Perth, University of Western Australia, 27/2/1975, 7.

[30] MWA, (1985: 60).

[31] *Ibid,* 2.

a study of Perth households in 1979 to investigate the extent to which the lower consumption was permanent and how it could be sustained.[32] The results and analysis from this study combined with the newspaper responses provide the basis of this historical examination of the role of the garden in communicating socio-cultural meanings in 1970s Perth, and the consequences of this role for water conservation in the suburbs.

Gardening in 1970s Perth

The reactions to the implementation of water efficiency measures as expressed in the metropolitan newspapers suggest that Perth residents were very attached to a certain garden aesthetic. Some gardeners feared the 'slow death of our green city and … the negation of years of work and care'.[33] Others considered the measures unfair for 'all the garden-conscious people who work hard on keeping their gardens beautiful'.[34] They argued, 'It would be costly to keep gardens attractive. After all, those are the people who help keep Australia beautiful'.[35] Although garden fashions had undergone some changes during the post-war period, particularly with the influence of European migrants, the 'standard garden' continued to dominate Australian suburbs in the 1970s.[36] These gardens typically included 'rectangles of lawn, straight-edged beds, carefully pruned shrubs and brightly coloured flowers, concrete paths, and few trees, other than the ubiquitous lemon'.[37] Most gardens contained at least some native plants but only those that conformed to the ordered style of the period. Perth gardens often included a blend of such flowers and shrubs as roses, hibiscus, camellias, and annuals, as well as large expanses of buffalo or couch lawn. With this mix of flowering exotic and native plants, the role of the 1970s garden remained one of horticultural display.[38] Yet the extent of opposition to lower water use in Perth gardens suggests that the appeal

[32] *Ibid,* 2.

[33] D. Easdown, 'Perth's future water supply', *West Australian*, 6/1/1978, 6.

[34] J. Bosch, 'Fears for gardens', *West Australian*, 18/8/1977, 6.

[35] J. Bosch, 'Fears for gardens', *West Australian*, 18/8/1977, 6.

[36] S. Knight, (1990) *The selling of the Australian mind: from First Fleet to third Mercedes*, Port Melbourne, Vic, William Heinemann, 49.

[37] A. Latreille, (1993) 'Behind the front fence: gardens and gardening', in J. O'Callaghan (ed.), *The Australian dream: design of the fifties*, Haymarket, NSW, Powerhouse Publishing, 126.

[38] *Ibid*, 137.

and socio-cultural value of the standard garden was more than merely a preference for the aesthetic.

In 1970s Perth, the standard garden was an important cultural site, invested with suburban meanings of civility and social status.[39] The front garden was particularly significant in communicating the household's socio-economic position. As a space on public display, the front garden was open to the critique of neighbours and passers-by. Through this area therefore, the household could present a 'desired self-image' of itself, conveying its conformity to suburban standards of taste and social duty.[40] In terms of the household's character, the front garden with its manicured lawn and flower-beds provided evidence of the homeowner's responsibility and care.

The cultural significance of horticultural display suggests that when forced to economise on water use, Perth households would endeavour to preserve their front garden at the expense of their backyard. In contrast to the display purpose of the front garden, the backyard was a productive space for service and manual work. The origins of this prioritisation of front over back lie in the historical uses of outdoor space in residential lots in Australian cities and suburbs.[41] Although the backyard was to be kept neat and tidy, it largely remained ostensibly private, hidden from public display.[42] The results of another CSIRO study of the gardening and water consumption behaviours of Perth residents during the 1977/78 restrictions reflected this attachment to the façade of the garden.[43] Researchers found that when forced to reduce outdoor water use, more

[39] K. Holmes, (2000) 'In her master's house and garden', in P. Troy (ed.), *A history of European housing in Australia*, Oakleigh, Victoria, Cambridge University Press, 164; K. Holmes, (2003) '"In spite of it all, the garden still stands": gardens, landscape and cultural history', in H-M. Teo and R. White (eds), *Cultural history in Australia*, Sydney, UNSW Press, 184.

[40] D. Malor, (2002: 236), cited in G. D. Daniels and J. B. Kirkpatrick, (2006) 'Comparing the characteristics of front and back domestic gardens in Hobart, Tasmania, Australia', *Landscape and Urban Planning*, vol. 78, 351. See also, R. Freestone, (2000) 'Planning, housing, gardening: home as a garden suburb', in P. Troy (ed.), *A history of European housing in Australia*, Oakleigh, Vic, Cambridge University Press, 133.

[41] G. Seddon, (1997) *Landprints: reflections on place and landscape*, Oakleigh, Vic, Cambridge University Press, 155.

[42] See, Freestone, (2000: 128-34); C. L. Girling, and K. I. Helphand, (1994) *Yard. Street. Park. The design of suburban open space*, New York, John Wiley & Sons, 27.

[43] G. Syme, S. Kantola and J. Thomas, (1980) 'Water resources and the quarter-acre block', in R. Thorne and S. Arden (eds), *People and the man made environment*, Sydney, University of Sydney, 199.

residents preferred to allow their backyards to decline than their front garden.[44] This desire to 'keep up appearances' in spite of financial, time and environmental hardships remains perhaps one of the most difficult issues facing water managers attempting to reduce water consumption in Australian cities.

A trend particularly associated with the performance aspect of the suburban garden was the rising popularity of the backyard entertaining area. The focus of this space was the patio, pool and barbecue, bordered by attractive structural plants of native and exotic origin.[45] A 1971 article in the local newspaper *Daily News* heralded the 1970s as the 'age of the swimming pool', as 'thousands of local people have joined in its trend'.[46] By the end of the decade, about 11 per cent of Perth homes had invested in a below ground pool.[47] When restrictions on the filling of all types of swimming pools were introduced, pool owners expressed their outrage. One asked, 'By what twisted bit of logic can it be legal to hand water a garden and not hand water a swimming pool?'[48] They sought the opportunity to choose how they reduced their water use, rather than have the authorities determine their garden activities.

The increasing financial investment in outdoor display during this period was arguably matched by the growing emotional significance of the garden. For some, it represented a refuge from the hectic pace of 1970s urban life. Time spent 'working in the garden' (5.5 hours per week) was eclipsed by time spent there for recreation, such as gardening and entertaining (6.5 hours per week).[49] This shift in the backyard's design from utility to relaxation has been well-documented in gardening literature. Local writer George Barnard, for instance, described the new role of the garden as an outdoor '"living"

[44] Interestingly, about 40 per cent of respondents allowed the verge or 'nature strip' to deteriorate. Such neglect might seem at odds with the idea of maintaining the façade of the front garden. Yet the verge area has been an historically contested space of local government and home-owner responsibility. See, T. Hogan, (2003) 'The "nature strip": Australian suburbia and the enculturation of nature', *Thesis Eleven*, no. 74, 55.

[45] J. Viska, (2007) *A guide to conserving and interpreting gardens in Western Australia*, Perth, WA Branch of the Australian Garden History Society, p. 35.

[46] 'Swimming pools add values to properties', *Daily News*, 15/2/1971, 17-18.

[47] Loh and Coghlan, 24.

[48] G. Cartmel, 'Rules on use of water', *West Australian*, 1/9/1977, 6.

[49] G. J. Syme and S. J. Kantola, (1981) 'Investment in private bores: underground water usage from a household perspective', in B. R. Whelan (ed.), *Groundwater resources of the Swan Coastal Plain*, Perth, CSIRO, 457.

environment', an extension of the 'living room'.[50] Refuge might also have been found in the rise of productive gardening during this period, with gardeners seeking a modicum of self-sufficiency or a more organic lifestyle.[51] A significant proportion of Perth householders (35 to 50 per cent) engaged in backyard food production in Perth during this period.[52]

Productive gardening was a popular outdoor activity also shared by recent European migrants to Australia. Due to the scarcity of familiar produce in local shops, migrant families cultivated traditional varieties of vegetables from seeds that they had brought with them to Australia.[53] As Kylie Mirmohamadi argues, '[G]ardens played a central role in the memory-making activities of such migrants, particularly in the construction of a remembered, and lost, home'.[54] The productive gardens of low-income migrant households also provided a means for them to economise on living costs with a vegetable-rich diet so that they might achieve their aspirations.[55] Their gardens therefore presented a space to establish themselves and assert their cultural identity in a foreign land, contributing to the process of settlement and home-making.

There is little research on whether migrant watering practices differed from those of Anglo-Australians, or how productive gardeners in general responded to water efficiency measures. This group of water consumers may have justified the expense of private water supplies as facilitating an alternative to expensive supermarket produce. These residents had probably developed more cost and water efficient consumption behaviours than those who gardened for more aesthetic reasons, or simply grew their produce seasonally. They may have been more aware of the need to use less water, the

[50] G. Barnard, (1974) 'Urban landscapes – the need for a "living" environment', *West Australian Gardener*, Summer, 23.

[51] Gaynor, (2006: 130, 140).

[52] Gaynor (2006: 160); G. J. Syme, S. J. Kantola and J. F. Thomas (1980), 'Water resources and the quarter-acre block', in R. Thomas and S. Arden (eds), *People and the man-made environment*, Sydney, University of Sydney, 187.

[53] M. Bosworth, (1991) 'Conversations with Italian women: close encounters of a culinary kind', *Studies in Western Australian History*, vol. 7, 98; A. Gaynor, (2001) 'Harvest of the suburbs: an environmental history of suburban food production in Perth and Melbourne, 1880-2000', PhD Thesis, UWA, 170-71.

[54] K. Mirmohamadi, (2004) '"There will be the garden of course": English gardens, British migrants and Australia', in K. Darian-Smith et al. (eds), *Exploring the British world: identity, cultural production, institutions*, Melbourne, RMIT Publishing, 210.

[55] Gaynor, (2006: 139).

importance of soil preparation, and had probably secured access to a private water supply for their gardens.

These are only some of the garden activities in which Perth householders engaged during the 1970s. They are testament to the range and variety of attachments to the garden spaces that the introduction of water efficiency measures stood to affect. Further, they reinforce the fact that the economic representation of water users as faceless consumers is an insufficient means to explore sustainable water use.

Residential responses to water demand management policies

In the following section, I examine how Perth households attempted to maintain the socio-cultural meanings of their gardens in the face of the introduction of water efficiency measures. The adaptation strategies that were available to consumers fell into three broad categories: avoidance, mitigation and compliance. Avoidance measures were those methods gardeners found to circumvent the restrictions on water use and the relative increase in water costs, Other householders employed mitigation responses by changing their garden style and water use where financially possible to reduce water consumption. I argue that the difference between avoidance and mitigation strategies lies in the motivation behind them. The evasion of the conservation impacts of water efficiency measures is regressive and negative, whereas mitigation is a more progressive and positive approach. Finally, compliance strategies are those of 'last resort', where the gardener has no alternative but to disrupt their garden routines and lower their water consumption outdoors. This final strategy lies at the core of the utility of water demand management policies, as the majority of householders do not possess the means, financial or otherwise, to employ avoidance or mitigation as their response. The following analysis of these strategies in the context of 1970s Perth suggests that the implementation of water efficiency measures that do not differentiate between users has unequal outcomes for consumers.

Avoidance

The avoidance method of adaptation to water efficiency measures enables the gardener to continue their existing water consumption habits to maintain their preferred garden style. Recent studies of gardens in North America and Australia suggest that water

consumption performs a vital function in maintaining a particular appearance. These studies showed that the lushness and greenness of a garden is understood by householders' peers to convey the household's socio-economic status.[56] Hence Perth's affluent areas, such as Peppermint Grove, Dalkeith and Claremont, have been historically referred to as the 'leafy Western suburbs'. Therefore, resistance to measures that could be detrimental to this greenery was also informed by the cultural value afforded to the garden as a signifier of the household's socio-economic standing.

Available only to the financially and geographically well-situated, the prime method of invisible water consumption was to install private bores and wells. These sources enabled householders to reduce their reliance on scheme water while maintaining their preferred garden image.[57] Unlike most other Australian capital cities, Perth residents had long utilised the vast body of groundwater lying below the sandy soil as a source of fresh water and to supplement scheme water supplies. Although there had been estimates and surveys of the number of bores in the metro area in the mid-1970s,[58] there had been little monitoring of exactly how much water was extracted. Some householders considered that land ownership gave them the right to access unlimited groundwater without restriction from the government.[59] As a result, many Perth residents believed groundwater should be 'free' of charge. Furthermore, some thought its extraction had few, if any, environmental costs.[60] It was considered to be somehow different to their scheme water. Just as mains water infrastructure encouraged a disconnection from nature, so too did private supplies obtained through bores and reticulation.

The Study offers important insights into the reasons for the investing in private water supplies. Non-bore owners desired alternative water sources to overcome the expense of

[56] J. B. Kirkpatrick, G. D. Daniels, and T. Zagorski, (2007) 'Explaining variation in front gardens between suburbs of Hobart, Tasmania, Australia', *Landscape and Urban Planning*, vol. 79, 315.

[57] G. J. Syme and S. J. Kantola, (1981) 'Investment in private bores: underground water usage from a household perspective', in B. R. Whelan (ed.), *Groundwater Resources of the Swan Coastal Plain*, Perth, CSIRO, 461.

[58] See, for instance, Syme and Kantola, 455, 468.

[59] W. M. Groom, 'Ownership in depth', *West Australian*, 28/10/1977, 6.

[60] H. C. Hills, 'Wasted water', *West Australian*, 2/5/1972, 6; D. G. Bungey, 'Meters on wells?', *West Australian*, 20/5/1972, 5; J. H. Winter, 'Bore-water savings', *West Australian*, 26/10/1977, 6; B. Paterson, 27/10/1977, *West Australian*, 6; G. Hamilton, 'Hard way to water', *West Australian*, 1/11/1977, 6.

scheme water and meet the needs of their garden.[61] Householders' expressions of concern for expense, convenience and garden 'health' all indicate that the garden was a valued space of identity for Perth's householders. The Study found that private bore access increased from 10 per cent of respondents in 1976 to 27 per cent in 1982.[62] This access came at a cost: the average cost of bores installed during the period 1976 to 1982 was about $1600 (at 1982 prices), excluding the cost of reticulation.[63]

Survey respondents indicated the most important factors relating to bore ownership were the price of scheme water and the scheme water use restrictions.[64] Although bore users were found to consume significantly less scheme water than non-bore users, the Study estimated that the volume of groundwater used was over seven times the average scheme water irrigation use by non-bore-users.[65] As bores were not metered at this time, (and remain so), groundwater use was invisible to its consumers. Rather than representing a shift towards reduced demand and improved conservation, the installation of private bores enabled existing consumption levels to continue, if not escalate. The ability of 'better off' consumers to circumvent restrictions and absorb higher water costs was thus clearly evident in their gardens, which remained green and otherwise unaffected by water restrictions.

Mitigation

An alternative response to the water efficiency measures was to change the style and composition of the garden to theoretically lower outdoor water usage. This adaptation strategy saw visible changes to the garden but allowed water consumption practices to remain invisible. In Perth, many gardeners turned to native plants. Gardening with native plants had become increasingly popular among urban Australians since the 1950s, and the social and political changes of the 1960s and 1970s consolidated this trend. The rise of the native Australian garden at this time can be attributed to a renewed

[61] MWA, (1985: 63).

[62] *Ibid,* 63.

[63] *Ibid,* 43. At a conference in 1981, Premier Sir Charles Court estimated that over 55 000 residents had invested some $110 million in their gardens by installing bores. See, C. Court, 'Address', in Whelan (ed.), (1981: II).

[64] MWA, (1985: 41, 43). Approximately 55 per cent of bores were installed by 'do-it-yourself' methods.

[65] MWA, (1985: 40, 63). The Study estimated that overall groundwater use was 1000 kL per annum for each house with a bore.

appreciation of local species; a preference for informality; a newfound appreciation for the Australian landscape; a growing environmental awareness; and a burgeoning national confidence.[66] The establishment of the botanic garden at King's Park in the mid-1960s, which showcased Western Australian flora, was also a significant influence on garden tastes in Perth. In addition to these influences, I argue that native plants largely became popular not for what they represented, but for how much they could potentially save the gardener in terms of time and money.

Citing increasing pressures on the water supplies of the growing city of Perth, the local authorities, gardening experts, and native plant enthusiasts urged householders to seek out more hardy, drought-resistant Australian natives. In 1978, local nursery-owner George Lullfitz described the growing popularity of native plant gardening:

> Most nurserymen have not grown all these plants, and so they have overlooked the potential of this diverse variety of flowers. Not until recently, when drought has created more public demand and interest, have the nurserymen been encouraged to look and grow these plants, and offer them to the garden lover.[67]

Such promotion of native plants recalled earlier encouragement from newspaper correspondents for householders to alter their gardens to suit local conditions.[68]

Many businesses saw an opportunity in this emerging trend towards less thirsty plants and landscaping designs. Newspaper gardening columns and advertisements referred frequently to Perth's water restrictions and user-pays water-rating structure. These reported on alternative native garden designs and landscaping features, such as brick paving and wooden railway sleepers.[69] The specialist nurseries offered a wide range of native plants, including bottlebrush, kangaroo paw, flowering gums, and paper barks. Advertisements urged gardeners to 'Go Native, Save Water' and to avoid 'time

[66] Hogan, (2003: 56); Seddon, (1997: 113-18).

[67] G. Lullfitz, (1978) *Grow the West's Best Native Plants*, Perth, West Australian Newspapers, 8.

[68] N. Barron, 'Call for ban on pools', *West Australian*, 7/11/1972, 6; M. Cromack, 'A compelling bid to save water', *West Australian*, 21/11/1972, 6; F. E. Lefroy, 'Water problems faced by Perth', *West Australian*, 30/1/1974, 6; L. McKenna, 'Letter', *Daily News*, 5/2/1971, 8; P. H. Samuell, 'Regulating water needs in Perth', *West Australian*, 26/1/1974, 6; D. I. Sutherland, 'Letter', *West Australian*, 30/11/1972, 6; A. Torrent, 'Water: law needs to be changed', *West Australian*, 14/11/1972, 6.

[69] Instant Gardens, 'Advertisement', *West Australian*, 16/9/1978, 13; Great Western and Grove Garden Centres, 'Advertisement', *West Australian*, 28/10/1978, 20; G. Lullfitz, 'Native is the answer', *West Australian: Classified liftout*, 12/8/1978, 23; Midland Brick, 'Advertisement', *West Australian*, 28/10/1978, 3; 'Nature's way to save water', *West Australian*, 30/10/1978, 23; Rockwood Landscape Supplies, 'Advertisement', *West Australian*, 20/10/1979, 9; Waldeck Nurseries, 'Advertisement', *West Australian*, 20/10/1979, 12; Westate Pumps, 'Advertisement', *West Australian*, 21/10/1978, 6.

consuming, expensive watering' with brick paving.[70] To appeal to those householders who were unwilling to sacrifice their gardens, native plants were marketed as unique to Western Australia and as offering householders more opportunities for relaxation.[71]

It appears that Perth households responded positively to these messages. The Study found many householders had made significant alterations to their garden landscaping in the late 1970s. These changes included, reducing their lawn area and increasing the use of more 'natural' products, such as native plants, woodchips and brick paving.[72] Large, affluent households that invested heavily in their gardens were more likely to make such changes than smaller, less affluent homes.[73] Instead of employing an avoidance strategy of sinking a private bore, these householders chose to make structural landscaping changes to their gardens. This mitigation strategy was perhaps preferred by gardeners who believed in the need to reduce water consumption but not at the expense of the appearance of their garden. This reasoning may account for the Study's finding that households which chose to mitigate the effects of water efficiency measures, achieved no greater decrease in water use than households which chose to avoid the measures.[74] This outcome suggests that the landscaping changes of the mitigation strategy were motivated by desires to appeal to a nationalist aesthetic or to reduce the expenditure of time, labour and money in the garden.[75] Rather than posing a limit on these consumers' behaviours, the water efficiency measures provided them with an opportunity to showcase their status in an alternative manner.

[70] Great Western Garden Centre, 'Advertisement', *West Australian*, 30/10/1976, 11; Midland Brick, 'Advertisement', *West Australian*, 20/10/1979, 8.

[71] Wildflower Nursery, 'Advertisement', *West Australian*, 3/2/1979, 4; Wildflower Nursery, 'Advertisement', *West Australian*, 2/9/1978, 6; Midland Brick, 'Advertisement', *West Australian*, 28/10/1978, 3.

[72] MWA, (1985: 65).

[73] MWA, (1986: 66).

[74] MWA, (1985: 49, 66). A possible reason for this result was that gardeners had a limited understanding of the water needs of indigenous plants. Syme and Kantola, 'Investment in private bores', p. 454; D. P. Heeps, (1986) 'Summary of the regulations, restriction and design mechanisms', in *Proceedings of the National Workshop on Urban Water Demand Management*, Perth, Western Australian Water Resources Council, 141.

[75] MWA, (1985: 49, 51). Elizabeth Caldicott describes similar circumstances in Adelaide at this time, see E. Caldicott, (1997) 'Gardening Australian style- the Adelaide example', *South Australian Geographical Journal*, vol. 96, 50.

Recent research on the interactions between humans and natural systems in Australian urban environments suggests that in the 1970s, native gardens may have been most popular with more progressive, tertiary-educated middle class households.[76] Keeping up with such trends as the native gardening movement conveyed their social standing to their peers, as 'there [was] no question about their respectability'.[77] The middle-class interpretation of the 1970s native garden, replete with railway sleepers, woodchips and native shrubs, signified the fashionably environmentally-aware household. This style of garden, which 'need[ed] close scrutiny for appreciation', would not have communicated the desired signals of suburban respectability to observers of the gardens of lower middle class and working class households.[78]

Compliance

The trend towards native plants and landscaping changes in Perth gardens was not without its detractors. Financial constraints on households would have contributed to the reluctance of many residents to change their gardens. The cost of some landscaping changes, such as expanding paved and woodchip areas, would have been particularly prohibitive The cheapest option of reducing the lawn area was the most consistently popular change made by households, peaking in 1979 with 21 per cent.[79] Some residents may also have wanted to avoid spending more time and labour on making what they might have perceived as unnecessary, unfashionable or unwanted landscaping changes. Others were dissatisfied with the messy and drab appearance of the native garden.[80] Many householders complained about the changes forced upon their garden watering routine and the deleterious effects of lowering their outdoor water use. As I described earlier, they considered the conservation measures would negate their time and money spent on nurturing their beautiful gardens.

[76] L. Head and P. Muir, (2007) *Backyard: nature and culture in suburban Australia*, Wollongong, NSW, University of Wollongong Press.

[77] *Ibid*, 81.

[78] Knight, (1990: 50-51).

[79] MWA, (1985: 65).

[80] G. Bolton, (1988) *Spoils and Spoilers: Australians make their environment 1788-1980*, Sydney, George Allen and Unwin, 130; J. Fiske, B. Hodge and G. Turner, (1987) *Myths of Oz: reading Australian popular culture*, Sydney, Allen and Unwin, 26-46; I. Hoskins, (1994) 'Constructing time and space in the garden suburb', in S. Ferber, C. Healy and C. McAuliffe (eds), *Beasts of suburbia: reinterpreting cultures in Australian suburbs*, Carlton, Vic, Melbourne University Press, 1-18.

For those residents who could not afford or chose not to avoid or mitigate the effects of the water efficiency measures, the only available option was to comply with the limits imposed on their water consumption. As they reduced their outdoor water use and resorted to using buckets and hoses on their standard gardens, the watering routines of these households became highly visible. Not only were residents required to take an active role in the watering of their gardens but also the appearance of these gardens, and lawns in particular, revealed that the homeowner had reduced their water use.

Despite the existence and use of avoidance and mitigation strategies, the majority of householders dramatically reduced their water use as consumption declined significantly during this period. The decline of real income during this period combined with the introduction of pay for use contributed to the high price elasticity of outdoor water use. That is, householders were forced to cut their cloth accordingly and did so in their gardens.[81] A range of 'tried and tested' conservation techniques were volunteered in the newspapers, particularly by women. For instance, the recycling of sink water on the garden; watering the car on the lawn using a bucket rather than a hose; and directing water to the ground, rather than the foliage.[82] To maintain the garden with less water, gardening experts advised residents to use nitrogen fertiliser; mow their lawns often, even weekly; water thoroughly; use mulch liberally; install trickle reticulation systems; and not to water in the heat of the day or in windy conditions.[83] These suggestions were relatively cheap to implement and provided gardeners the opportunity to attempt to preserve the façade of their garden while lowering their outdoor water consumption.

Others meanwhile complained bitterly about the drastically reduced water allowance under the new user pays system. The implementation of the system in 1978 prescribed a flat allowance of 150kL for all households and a further charge for each kilolitre used in

[81] MWA, (1985: 59).

[82] K. M. Bradshaw, 'Letter', *West Australian*, 16/7/1977, p. 6; E. Irwin, 'Ways to save water', *West Australian*, 21/10/1976, p. 43; I. M. James, 'Water supply', *West Australian*, 13/12/1957, p. 6. The Public Health Department warned Perth residents against using water from kitchen sinks, wash cycles of washing machines and water used for hand washing clothes due to health risks. Only water from showers, baths, basins and the rinse cycles of washing machines was permitted on gardens. See 'Danger seen in reusing water', *West Australian*, 2/12/1977, p. 16.

[83] 'Cutting your excess bill', *West Australian*, 20/1/1969, p. 4; 'Waste will mean water cuts', *West Australian*, 18/2/1972, p. 3; 'Easy way to water', *West Australian*, 3/3/1972, p. 38; Hugall & Hoile, 'Advertisement', *West Australian*, 11/12/1976, p. 21; 'Survival of the garden', *West Australian*, 13/7/1977, p. 2.

excess of this amount, regardless of the size of the household, residential block, and home value. Although 70 per cent of households were already on some form of 'pay for use' prior to 1978, for many households the new allowance would have been significantly different to their allowance under the old scheme.

The local press identified concerns regarding the effect of this new allowance on larger families.[84] The *West Australian* found that the Water Board had underestimated the size of the average Australian family in its calculations of the 150 kL allowance. The newspaper argued it would be difficult therefore, for larger families to ensure their water consumption remained within the allocation and thus avoid excess water charges.[85] Some rental tenants also faced the excess water bills for the high consumption of previous tenants.[86] For these householders, garden maintenance was a lower priority in terms of the household budget.

Unlike avoiders who also valued the standard garden but could afford to sustain their watering habits, compliant households could not conceal their inability to keep a green garden. Although there is little documentary evidence of how these households were perceived when they could not optimally maintain their gardens, the cultural value attached to a standard garden maintained to its best suggests that a lesser garden would have been considered unsatisfactory by the household and its neighbours. The indiscriminate implementation of water efficiency measures in 1970s Perth thus exposed socio-cultural attachments to certain garden styles and limited the opportunities available to less affluent households to adapt to such measures.

After the 1970s

Once restrictions were lifted in 1979 and residents had become accustomed higher water costs, water consumption slowly increased into the 1980s. Although water use remained significantly lower than at the beginning of the 1970s, the rise in consumption suggests that the demand management policies were to have only a relatively short-term

[84] F. Hrubos, 'Charges on water', *West Australian*, 2/6/1978, p. 6; 'Some householders now on excess water', *West Australian*, 1/9/1978, p. 17.

[85] 'Water forecast: a costly summer', *West Australian*, 9/8/1978, p. 3.

[86] W. L. Harris, 'Dwelling', *West Australian*, 28/8/1978, p. 6.

effect on householders' attitudes and behaviours. Residents arguably saw the relaxation of these policies as an opportunity to resume their garden watering within the limits of their household budget so as to maintain their most public display of suburban good taste. Indeed, the garden remains an important site of cultural consumption with over half of household water use spent outside, most of which is spent on the lawn and garden.[87] Household water use has increased by about 55 per cent since 1981, although there has been a permanent daytime sprinkler ban in Perth since November 1994 and limits on sprinkler use to two days per week since September 2001.[88] In addition to these measures, restrictions on bore use to three days per week were introduced in October 2007.

Conclusions

Using newspapers accounts and consumer survey results, I have explored the environmental issue of urban water scarcity from an historical perspective. This environmental history has examined communities, their values, behaviours, how and where they live, in order to give faces, lives and histories to the people that consume resources in our suburbs and an historical perspective on a contemporary sustainability issue.

The implementation of water efficiency measures on the suburbs of Perth in the late 1970s was successful in reducing domestic water use by nearly half. Yet due to their indiscriminate application, the measures had an unequal impact on Perth residents, particularly on those who were less affluent. Water restrictions in particular saw householders adopt certain strategies in order to adapt to the new limits on their water use around their homes. Residents who could afford to circumvent restrictions and higher water costs to maintain a particular garden aesthetic pursued the avoidance strategy. Other households sought to mitigate the effects of water efficiency measures by changing their gardens in order to reduce its need for water. These strategies, however, were financially prohibitive for many others. Although they valued the appearance of the standard garden, they could not afford to sink bores, accommodate

[87] M. Loh and P. Coghlan, (2003) *Domestic water use study in Perth, Western Australia 1998-2001*, Perth, Water Corporation, 30.

[88] *Ibid*, 25.

excess water charges, or change the landscaping of their gardens. Instead, they could only comply with the conservation measures by reducing their outdoor water use on their gardens. With its requirement of hand and bucket watering at certain times, this strategy was most disruptive to normal watering and gardening routines.

Although garden styles may have changed since the 1970s, the outdoor spaces around the home remain significant sites for the display of identity in Australian suburbs. Fortunately for the water authorities of the twenty-first century, suburban Australians are significantly more environmentally aware than their predecessors and are more experienced with dry conditions. Governments likewise, have more scientific and technical resources at their disposal, which have made alternative water supplies such as desalination an affordable option. Yet outdoor water restrictions prevail as a key method of enforcing water conservation in the suburbs. Presumably this is because the water consumption outside the home can be more easily monitored than inside. This environmental history suggests, however, that water efficiency measures should be implemented so that consumers can choose as individuals or households as to where and how they reduce their water use. To ensure a sustainable water future for suburban Australians and to foster urban resilience, water managers need to seek more equitable and diverse methods of encouraging consumers to use our precious water wisely.

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