Chapter 3

Down the gurgler: Historical influences on Australian domestic water consumption

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Australian city-dwellers are a thirsty people. Between the mid-nineteenth century and the present, the average daily consumption of water in Melbourne and Sydney has nearly trebled, from around 100 litres per head to around 300 litres per head. Industrial and other non-domestic users absorb about one-third of the flow but most is consumed in the bathrooms, laundries, kitchens, gardens and swimming pools of private homes. Usage has fluctuated across this period in a stepwise fashion. The first step in the later nineteenth century was associated with the introduction, under the influence of sanitary reformers, of piped water and underground sewerage, and had already pushed consumption to almost 200 litres per head by 1890, much higher than contemporary British cities. Even then it was clear that the Australian city-dweller's demand for copious supplies of clean water was inspired by a range of climatic, aesthetic and hedonistic, as well as hygienic, motives. 'More water is required because of the climate', observed William Davidson, engineer in charge of Melbourne's water supply in 1889; 'people bathe more here than at home, and another thing is, Melbourne is built very differently than any town at home, in that the whole of the settlement is on allotments with gardens' (Dingle and Rasmussen: 29). The second step occurred after the Second World War when suburban sprawl, rising affluence and advances in domestic technology pushed per-capita consumption to an all-time high, around 400 litres per day. And the third step, this time downwards, came after the 1980s as per-capita consumption was curbed by drought, increased prices, the adoption of water-saving technologies and more stringent regulations. Currently, under Stage 3 restrictions, Melburnians use about 280 litres per day.

Running water has long been regarded as an indispensable to any civilised community, but it is more indispensable for some purposes than others. From drinking and cooking, through showering, bathing and washing to flushing, watering and swimming, the household uses of water descend through an implied 'hierarchy of needs'. For some purposes, such as drinking, there is no substitute for water, while for others, such as disposing of human excreta, there are

alternatives, such as the pan system (dunny can) or composting toilet. Our present ways of using water are a product, not of primal needs, but of history. They have been shaped both by culture (tastes, fashions, perceptions of health, virtue and comfort) and by path dependency (the particular array of technologies, governmental and pricing regimes we have created to supply and use water) (Shove 2003). By excavating the history of these arrangements, we are better able to think about how they might be changed or improved. The main reason that water usage in Australian cities is now unsustainable is not, however, that patterns of consumption have changed, but that urban populations have grown beyond the capacity of the catchments, which are themselves now subject to more variable patterns of rainfall. Environmental responsibility does not require us to return to some more virtuous pattern of past usage, for not everything about the past was virtuous and, in any case, the past is past and beyond recall. But it does require us to rethink the nature of our dependence on water, and to imagine how we might use it better. In this respect, history is an aid to imagination, if not a source of ready-made solutions. In this paper I consider, in turn, the changing patterns of water consumption for flushing, bathing, washing clothes, and outdoor uses, especially for irrigation and recreation.

The pursuit of health and morality

'Cleanliness', the eighteenth-century evangelist John Wesley famously declared, 'is next to godliness.' His adage reminds us of the strong link between Protestant morality and modern habits of cleanliness (Bushman and Bushman 1988). Clean water, applied inwardly and outwardly, was both an instrument and symbol of Victorian morality. In perhaps the most famous Victorian fable of cleanliness, Rev. Charles Kingsley's *The Water Babies* (1863), Tom, a poor chimneysweep, falls into a stream and drowns. He is magically transported into a kind of watery paradise where, freed from the cruel tutelage of his earthly master Mr Grimes, and washed clean from the soot that had once covered him from head to foot, he joins the happy company of water-babies. Kingsley's story draws, of course, on the religious symbolism of water as a medium of baptismal regeneration, but he was also an ardent supporter of sanitary reform, and concludes his tale by addressing his young readers with a more a mundane lesson: 'Learn your lessons, and thank God that you have plenty of cold water to wash in; and wash in it too, like a true Englishman.' Nothing, his young reader is assured, can go wrong 'as long as you stick to hard work and cold water' (Kingsley 1863: Chapter 8). A belief in the benefits of cleanliness and cold water became one of the pillars of a more general code of respectability, shared by working-class secularists as well as middle-class Christians. 'What is our doctrine?' pupils in the Lyceum, Melbourne's free-thought Sunday School, were asked. 'Frequent ablutions in cold water', was the reply (O'Dowd 1888: 16).

Conscious of this heavy overlay of Victorian morality, recent scholars have sometimes treated the fixation of contemporary reformers on dirt and cleanliness as an irrational fetish. Yet there was much in their recent experience to persuade contemporaries of the benefits of clean water. Between the early 1830s and the mid-1850s, Britain was thrice visited by epidemics of Asiatic cholera which together killed over 100 000 people. Cholera did not kill as many people as endemic diseases like typhus and tuberculosis, but its sudden onset, obscure causation and dramatic effects struck fear into the entire population. Victims were carried from their houses, writhing, sweating, vomiting and defecating uncontrollably, to over-crowded hospitals where doctors laboured, often vainly, to contain the epidemic. They were puzzled about the causes of the disease, some believing that it was carried directly from person to person, others that it was caused by miasmas or poisons in the air. Only in 1849, after the second major outbreak, did the London physician John Snow discover the correct explanation: that the cholera bacillus was transmitted through water supplies contaminated by human faeces. In 1853 Snow confirmed his theory by demonstrating that local victims of the epidemic had all taken water from the same contaminated pump in Broad Street, Soho (Longmate 1966: 201–11).

Flushing

Snow's discovery dramatically confirmed the importance English public health reformers already placed upon the need for a pure supply of water and the safe disposal of human wastes. The most influential of them, Edwin Chadwick, author of a famous 1842 inquiry into the *Sanitary Condition of the Labouring Population of Great Britain*, placed clean water and underground sewers at the top of his agenda. Like many of his contemporaries, Chadwick conceived the city as an organic system, analogous to the human body (Sennett 1994; Davison 1982: 364–6). A healthy city, like a healthy body, depended on the free circulation and exchange of vital fluids. Sanitary reformers sought to imitate the marvellous economy of the human body by integrating the supply of water, the disposal of sewage and the production of food in a single self-regulating system. Chadwick believed that piped water was as important for the safe disposal of human wastes through underground sewers as it was for clean drinking and washing. Combining water-supply and sewerage systems, he argued, would create 'an unseen, unostentatious, self-acting system of excretory ducts' (Chadwick 1965: 135 n.2). Chadwick's organic conception of the city, and its corollary, the interdependence of water-supply and waste disposal, deeply influenced the first generation of Australian public health officials many of whom, like Sydney's George Dansey, Melbourne's Tharp Girdlestone and Hobart's Robert Officer, had been trained in mid-century London (Mayne 1982: 58; Dunstan 1984: 244–6; Petrow 1995: 7–9).

The completion in 1865 of Sir John Bazalgette's massive underground sewerage system for London confirmed water-carriage as the preferred method of disposing of human wastes in towns. Designed for a city 10 times as populous and five times as dense as colonial Melbourne, it nevertheless remained the standard to which most Australian sanitary experts aspired. 'It is generally conceded that the sewerage or water-carriage system is the only one which collects and carries away the night soil and foul waters of a large town effectively', affirmed Melbourne engineer James Styles in 1888. 'Its action is prompt, and what is of equal importance, it is automatic. A substance dropped into any closet in Melbourne would not only be swept into a sewer at once, but it would be carried outside the city boundary in less than a hour.' (Styles 1888: 11) Underground sewerage was not just the best but, seemingly, the inevitable solution to human waste-management. Although it cost more than alternative methods of disposal, experts believed that its high cost would be justified in the long run (Girdlestone 1876: 12; Culcheth 1881: 191).

Between 1880 and 1910 both Sydney and Melbourne adopted underground sewers as the main means of disposing of human wastes. As the cholera had hastened the arrival of London's sewers, so the outbreak of typhoid epidemics in both cities during the 1880s had hastened the change. Sydney's sewers emptied into the ocean, Melbourne's to a large sewerage farm at Werribee beyond the city's western rim. Contemporaries welcomed the coming of the water closet to Australia's seaboard cities with relief, as at last removing a shameful blot on Australian civilisation. This was in spite of the fact that very few British cities other than London were any further advanced. 'At the end of Queen Victoria's reign, W.C.s were still unknown to the majority of her subjects', the British historian Anthony Wohl wryly observes (Wohl: 95).

Contemporaries probably exaggerated the benefits of water-carriage as a method of waste disposal. Historians who have closely examined the course of its introduction have sometimes wondered whether it was either efficient or effective. The economic historian W. A. Sinclair suggested that it was only when the costs of the old pan system exceeded those of underground sewerage that Melbourne opted for change. But his argument was convincingly challenged by David Merrett, who estimated the cost of the new system as actually twice that of the old (Sinclair 1975; Merrett 1977). The connection between improved health and the advent of the water closet was no clearer. While urban mortality, especially from typhoid and other contagious diseases, fell during the latter nineteenth and early twentieth centuries — the decades when Sydney and Melbourne were being sewered — the decline actually began before the inauguration of the sewerage system and was attributable, at least in part, to factors incidental to it, such as improved habits of personal cleanliness and street drainage (Dunstan 2003: 67–78). 'We are left with the fact that a major investment in public sewerage was established in Sydney and expanded, on what were

essentially false premises', Dan Coward observes in his penetrating study of Sydney's environmental history (Coward 1988: 67). The decision to adopt underground sewerage was a momentous one determined not by economics or medical science — though both had some influence — but largely by the power of Chadwick's vision of a sanitary city linked by an 'unseen, unostentatious, self-acting system of excretory ducts'. Henceforward Australians, like Britons and Americans, would come to regard the water closet and the flush cistern as indispensable markers of civilisation.

Those who designed and built the sewerage systems were convinced that they would use no more water than the earth-closets and privies they replaced (Culcheth 1881: 190). However, between 1900, when the first houses were connected to the Melbourne system, and 1911 when most were connected, per-capita water consumption rose by almost 30 per cent, from approximately 50 to 65 gallons. Some observers put this down to the increased volume of water required for underground sewerage, but MMBW Chief Engineer William Thwaites was not persuaded. Not as much water was wasted as before in washing down yards and drains, he contended. Garden watering and extra showers in hot weather accounted for the increased consumption (Dingle and Rasmussen: 115). Yet there seems no reason why hosing and showering should have suddenly increased, and it may be significant that per-capita consumption levelled out after the system was completed.

In Melbourne water closets were flushed by pulling a chain connected to a three-gallon (13.6 litre) overhead cast-iron cistern; in Sydney the two-gallon (9 litre) cement cistern was standard (John Danks Catalogues, 1906, 1952). A contemporary who attempted an estimate of household water use in New South Wales allowed six gallons (27 litres) per head for water closets (Bruce and Kendall 1901: 55). In an era when the journey to the backyard dunny was longer, and every bedroom had a chamber pot, families may have held on longer, collected faeces and urine in a single vessel and flushed less frequently than today. The advent of the indoor loo from the 1920s and the multiplication of bathrooms and toilets in the post-war era finally banished the chamber pot, but the technology of flushing changed little until the 1970s when the Caroma company introduced the dual-flush toilet (Department of Environment and Water Resources). A standard dual-flush toilet uses less than half as much water as an old-style overhead cistern (3–6 litres per flush compared to 11 litres) and more recent 'smart-flush' models use even less (3 or 4.5 litres per flush) (Water Efficiency Labelling, 2007; Caroma website). Since nature presumably called as frequently in 1900 as in 2000 these technological improvements might have been expected to reduce the per-capita consumption of water for flushing, yet it is unclear whether they did so. Water closets currently account for between 15 and 23 per cent of household water consumption (around 50 litres) (ABS 2004 in Troy 2007), a similar proportion of per-capita use, but about twice the actual volume per

head, as in the early 1900s (26 litres), if the rough, and perhaps inaccurate, contemporary estimates are accepted.

Bathing

'Cleanliness is the outward sign of inward purity', a guide to Australian etiquette advised upper-middle-class readers in 1885. 'Cleanliness of the person is health, and health is beauty. The bath is consequently a very important means of preserving the health and enhancing the beauty. It is not to be supposed that we bathe simply to become clean, but because we wish to remain clean' (*Australian Etiquette* 1980: 376–7). *The Australian Housewives' Guide* (1885), published in the same year for respectable working-class readers, offered similar advice, though in a more down-to-earth fashion. 'Personal cleanliness and neatness are the first requisites towards good housekeeping, and no woman who wishes to preserve her husband's affections, or make him comfortable, should ever waver in those attentions to her own person which will preserve whatever share of beauty she has' (*Australian Housewives' Guide* 1885: 72). In Australia, it was argued, daily bathing in cold water was 'a luxury all the year round', and a duty no self-respecting woman need fear: 'Have a good breakfast and you will be admirably strong enough to resist the slight shock of a cold shower bath' (*Ibid.*: 77).

Advice manuals written by stern moralists and reforming doctors may be a treacherous guide to the behaviour of contemporary city-dwellers, most of whom lacked the facilities, let alone the moral resolve, for the daily cold shower. Bathing and showering, as contemporaries understood those words, seldom meant full immersion in a deep tub or under a running shower. Most authorities recommended a daily sponge or hip bath, using only the few quarts of water that could be conveniently carried from the tap to the bedroom, together with a weekly warm soapy tub in order to open up the pores of the body and cleanse it from the impurities believed to accumulate there. The morning shower or bath was designed to refresh and stimulate; the weekly bath, usually taken in the evening, was designed to relax and cleanse (Muskett 1987: 24–34; *Australian Etiquette* 1980: 376–7; *Australian Housewives' Manual* 1885: 78; Wicken 1891: 194–7).

English visitors hailed the apparent superiority of Australian bathing arrangements. 'There is hardly the smallest cottage without its bathroom', Julian Thomas claimed in 1893 (Thomas in Dingle and Rasmussen: 29). He almost certainly exaggerated. In his fascinating account of *Our Home in Australia* (1860), the Adelaide artisan Joseph Elliott describes the contents of his house, minutely room by room. Only when he comes to the backyard, and mentions two washtubs stowed amidst hen coops and assorted rubbish, and characterises Saturday evening as 'ablution night', do we gain a glimpse of how the family performed what contemporaries called their 'toilet' (Elliott: 75–6, 78). Even in the 1880s

many new houses designed for Australian workingmen had no bathroom. Those that had were tiny wooden enclosures tacked onto the back veranda, housing only a copper and a tin bath. A Queensland sanitary inspector considered the typical bathroom was 'the dirtiest room in the house' — sloppy, ill-lighted and smelling of urine, disgusting evidence that the bath doubled as a 'slop-sink'; that is, as a place to empty chamber pots (Elkington 1911).

The Ideal Bathroom of the 1920s, with its white tiles and chrome fittings, resembled a laboratory more than a boudoir. *Australian Home Beautiful*, 1925

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THE AUSTRALIAN HOME BEAUTIFUL

November 12, 1925

A beautiful bathroom designed by Mr. C. H. Ballantyne, the Melbourne architect. It is tiled in blue and white, with a built-in radiator. An attractive feature is the slots in the tiled wall by the bath for soap, brushes, etc.

THE IDEAL BATHROOM

By F. L. KLINGENDER

A Melbourne architect describes the essentials of a small bathroom and some blunders for the homebuilder to avoid.

DY the term "ideal bathroom" it is not intended to mean those salacious apartments which are frequently east or north, thus getting the morning sun in winter and encouraging those Scandinavians who take a cold bath all the

Bathrooms were more common in middle-class than in working-class homes, though one should beware of assuming that cleanliness was a matter of class. In working-class Richmond, historian Janet McCalman found that bathrooms were more the exception than the rule. Many families lacked internal water supplies and were obliged to heat their bathwater in a wood-fuelled copper in the backyard. That so many did so, against such odds, showed how far ideals of personal cleanliness had permeated the respectable working class (McCalman 1984: 44). In middle-class Surrey Hills, where Moira Lambert grew up in the 1920s and '30s, the bathing arrangements were not much more advanced:

The daily ablutions were performed by heating water in a kettle, achieving the right temperature by adding dollops of cold, and then giving oneself a good wash all over from a larger enamel basin. Saturday night was bath night for the family, and I think that water must have been heated in the copper and toted in by bucket. Later we graduated to a gas bath-heater and shower, and finally — some time in the 1930s — a hot water service was installed (Lambert: 18–9).

New technologies influenced the evolution of the Australian bathroom, although they were themselves shaped by shifts in people's understandings of health, beauty, bodily comfort and pleasure. To understand them we need to appreciate how people *felt*, as well as what they *thought*, for the history of the twentieth-century bathroom is, above all, a history of the body and its senses, including that powerful stimulus to disgust, pleasure, arousal and nostalgia, the sense of smell.

In 1967 the artist Norman Lindsay, then approaching his ninetieth year, noticed a provocative article in the *Bulletin* magazine. The writer Sidney Baker had made the daring suggestion that the bushranger Ned Kelly may have been a homosexual, citing the fact that the famous outlaw was said to have used perfume and had danced with other men. Lindsay was indignant. 'Nearly all men of that era, irrespective of class, used perfume. My father, an Irishman, a horse-and-buggy doctor, and as dominant a male as ever wore whiskers, always finished off his morning toilet by dabbing his handkerchief freely with perfume.' Lindsay did not blame Baker for his ignorance of this fact, for he had 'forgotten it myself till I called it back to memory'. It was one of those 'trivialities which writers of the period rarely record, because they are conventions as understood by their readers'. In an era when open drains and reeking cesspools polluted the atmosphere, he explained, 'men, hurrying about their affairs, had no other resource but to clap a handkerchief loaded with perfume to their noses' (Lindsay 1990: 234–6).

People's sensitivity to smell, good and bad, not only changed over time, it also varied from one contemporary society to another. In his fascinating book *The Foul and the Fragrant*, the historian Alain Corbin (1986) notes the contrasting sensibilities of the nineteenth-century French and English.

The relative indifference shown by the French to cleanliness, their rejection of water, their long tolerance of strong bodily odors, and their continued privatisation of excrement and rubbish cannot be explained solely by a secret distrust of innovation, by relative poverty, or by slow urbanization. It was the collective attitude toward the body, the organic functions, and the sensory messages that governed behavior patterns. It is regrettable that historians have given scant attention to this somatic culture. (Corbin 1986: 173)

Towards the end of the nineteenth century, Corbin observes, the 'somatic culture' was characterised by the progressive 'deodorization of private space'. First in England, and later in France, the bathroom was being purged of unpleasant smells, and transformed into a 'sensually neutral and innocent space' (Corbin 1986: 175).

The crowded family bathroom was the bane of many post-war households, but a brake on water consumption. *Australian Women's Weekly*, 1951.

By the early twentieth century, Australians, too, had begun to transform the bathroom from a humble, often smelly, outhouse into a more 'innocent space' (Shove 2003: 94 and compare Lupton and Miller: 17–34). 'A well-equipped bathroom as an essential to the Home Beautiful whether it be Mansion, Villa or Cottage', advertisers assured readers of Australia's leading home magazine in the mid-1920s (*AHB* 12 February 1926: 5, 9). From its old place, amidst the copper and the laundry tubs on the back veranda, the bathroom was promoted into the most private and intimate zone of family life. 'The bathroom should be, as far as possible, close to the bedrooms, so that the occupants of the house do not have to undertake a lengthy pilgrimage in somewhat flimsy attire on a winter's morning', a Melbourne architect advised in 1925 (*AHB* 12 November 1925: 26; and compare Archer 1998: 116). In reinforcing a new sense of domestic privacy, the bathroom was, paradoxically, also becoming a mark of social status. 'Is your bathroom attractive? Can you show it with as much pride as you can your other rooms?' another advertiser inquired (*AHB* 12 February 1926: 9). Two themes dominate bathroom designs of the period: hygiene and comfort. Black and white tiles, enamel baths, pedestal basins and corrugated iron shower screens created an aura of antiseptic cleanliness, more akin to a laboratory than a boudoir. Yet the bathroom was also becoming 'the room in which comfort and convenience count most', especially to women whose image, often depicted in slinky satin dressing gowns, routinely accompanied advertisements for soap and bathroom fittings (*AHB* 1 December 1926: 10).

The pursuit of beauty and comfort, as much as the pursuit of health and cleanliness, gradually came to dominate contemporary attitudes to bathing. By the 1920s, the main dirt diseases, such as typhoid and dysentery, had been all but conquered (Cumpston 1927: 206–8). At the turn of the century advertisements for the most popular brands of bath soap, such as Lever Brothers' Lifebuoy, promised health and safety; but 20 years later, newer brands, like Lux and Pears toilet soaps, were promoted primarily as aids to personal beauty (*AHB* 2 September 1929; 2 December 1929: 83). Preserving one's complexion required a program of more frequent soapy baths. 'Frequent warm baths, at least one or two a week, are a necessity, with the thorough washing of the skin with a good soap to remove oily secretions, perspiration, dirt, dried skin etc followed by a brisk rub of the towel to complete the cleansing and stimulating process', a 1931 guide to housewifery recommended (Blackmore 1931: 6). 'Beauty with Pears' promised one advertisement, extolling the benefits of soap so pure you could almost see through it. From the 1930s Lux began a long tradition of advertising its product through endorsements by Hollywood movie stars. 'Keep that Wedding Day Complexion', promised Palmolive. Meanwhile, Lifebuoy reinvented itself by exploiting the fear of social ostracism and romantic failure associated with a dreaded new disease, 'BO' — or body odour.

Beauty, rather than hygiene, became the main theme of the bath soap advertisements in the early twentieth century. *Australian Women's Weekly*, 1951.

School bells changed to church bells . . . when blue-eyed Joan Mills became Mrs. N. R. Stephens of Adelaide Terrace, Perth, W.A.—for the bridegroom was her childhood playmate. To match the flowers in her bouquet, this lovely Pears Bride pinned a spray of creamy roses and tuberoses to her mist-fine embroidered veil.

That clear, smooth
Pears skin
can be yours!

Babies have it . . . Brides have it . . .

YOU CAN HAVE IT, TOO! No matter what your mirror tells you now, you can begin to see improvements in your skin in just a few days. Gentle Pears Soap, preferred by generations of beautiful women, can help you discover your greatest natural asset—the appeal of a clear, smooth skin.

It takes a SLOW-maturing soap to give you QUICK results. Even in the rush and bustle of modern times, Pears Soap still undergoes long maturing process, which made it famous since 1789. Pears' soap is matured for a full week to ensure its absolute mildness and its beautiful transparent purity. The patient maturing of fine soaps could produce such beautiful results, such rapid improvement in your skin.

From clear, pure PEARS soap . . . a clear, smooth PEARS skin

The most serious obstacle to the frequent warm soapy baths recommended by these health and beauty experts was the lack in most homes of a copious supply of hot water. 'Although the bath has always been acknowledged as an indispensable aid to health and beauty, the average home seldom has facilities for providing in sufficient quantity its necessary complement — Hot Water', a Melbourne manufacturer noted in the late 1920s (Danks catalogue, nd). He was extolling the benefits of a new invention, the wood-chip or gas bath-heater, as a source of 'instant hot water'. In practice, the hot water supplied by a bath-heater was rather less than instant or copious. In order to take a bath, one had to fill the heater, a metal cylinder containing sufficient water to half-fill the bath, light the gas-burner or wood-fire underneath, and wait 15 or 20 minutes until the clouds of steam issuing from the heater signified that all was ready. Turning on the hot and cold taps, the bather waited for the bath to fill before at last climbing in. The routine could be interrupted by exploding gas, wood-chips that failed to ignite, water that was either scalding hot or freezing cold, and impatient bangs on the bathroom door as other family members waited their turn. By the 1930s, a good chip bath-heater like the 'Kangaroo' ('a few chips of light wood give sufficient water for a steaming hot bath') sold for around £5. A superior brand, like the Braemar, which heated enough water for an eight-inch-deep bath in 25 minutes, cost around £10. The top of the range, the Triton Electric Bath Heater, costing up to £15, came closest to the Holy Grail of domestic comfort, instant hot water:

The gas bath-heater represented a modest but significant advance towards the goal of instant hot water. *Australian Home Beautiful*, 1928.

**You'll be
Happy Too**
If You Instal a
**Douglas
Bath-
Heater**
Heaters for Gas
(Copper Nickel-Plated)
£6
Heaters for Wood Fuel
from 55/-
From the Hardware
Trader or
Douglas & Co.
Pty. Ltd.
180 Little Collins St.
Melbourne

Commander of the Bath!

DOUGLAS BATH HEATERS
Safest - Fastest - Best

The advertisement is a black and white illustration. On the left, a man is sitting in a bathtub, looking up at a small heater on the wall. On the right, two men in traditional Chinese clothing are standing and talking. The text is arranged around the illustration, with a large headline at the top and a list of products and prices on the left. The bottom of the advertisement features the company name and address.

Hot-water system. *Australian Home Beautiful*, 1938.

What a boon for the mother to be able to go and turn on the bath heater tap and steaming hot water is there!—without a moment's preparation, without a scrap of fear or of danger or of dirt; no chips to chop, no matches to strike, no escaping gas, no chance of suffocation, no ashes to clean up! (*AHB* 1 December 1927: 66)

Full-scale domestic hot-water services, heating water centrally and piping it throughout the house, had been advertised since the 1920s, but by 1943, when Professor Wilfred Prest and a team of social researchers surveyed housing conditions in inner Melbourne, only 2 per cent of households had a hot-water service and more than a quarter of households were still heating their bathwater on the stove (Darian-Smith 1990: 98). From the late 1940s, however, there was a rapid increase in the number of houses installing gas or electric hot-water services. Since the 1930s, the primary costs of hot water systems had declined in real terms and the introduction of off-peak rates for electricity further boosted demand. According to market researchers, Australian housewives considered 'continuous hot water' no longer a luxury, but a necessity (*AWW*, 23 March 1946: 13). By the early 1960s most Australian families could simply turn a tap to obtain a copious supply of hot water for washing, bathing, cooking and cleaning (Webber 2000: 175). Probably no other single innovation in the history of Australian domestic water consumption had such large effects. It heralded the rapid decline of the traditional bath-night, for now people could bathe or shower when they liked, without the exasperating wait outside the bathroom door as each tub of water was heated and filled. It laid the foundation for the

introduction of other household appliances such as the washing machine and, later, the dishwasher. By removing barriers of time and discomfort, it also ushered in a new era of more extravagant water-use.

Melbourne and Sydney Cisterns

By the 1960s, plans for new project houses often included separate shower recesses and, from the 1970s, sometimes an ensuite bathroom as well (Garden 1995: 146, 150–1). 'There was a time when the bathroom was the worst decorated room in the house', a 1978 renovation manual began. 'No soft carpet here, no wallpaper, no daring colour scheme, no comfort; just a utilitarian, cold and sterile room where people washed' (Masters 1978: 7). Now, however, the bathroom was undergoing a 'revolution of thought. The bathroom has to have a touch of luxury, and why not?' Vanity suites, carpets, coloured wallpapers, and occasionally saunas and spas, were 'touches of luxury' in bathrooms that

as yet usually remained structurally unchanged. Only in the 1990s did the implications of this 'revolution of thought' become fully apparent. The bathroom had always been a mirror of changing attitudes to the care of the body. From preoccupations with health and safety it had evolved, first, towards ideals of beauty and comfort, and, more recently, to the pampering of the body and the recuperation of the private self. A recent architectural writer conceives it as 'a haven for relaxation, grooming and total privacy' (Hasanovic 2005). Contemporary house designs now often incorporate three or even four bathrooms. The largest of them — typically the 'ensuite' adjoining the master bedroom — may be as large as a small bedroom in the houses of a previous era. Designed to express 'a sense of calm' and 'sensuous tactility', it may look through plate-glass windows into an enclosed courtyard (Hasanovic 2005). Showering, a ritual usually performed at the beginning of the day, is designed to stimulate the body to wakefulness after rest and may take only a few minutes. The bathroom, however, has now become a place for pampering the body and soothing the ego. The indispensable agent of this healing process — whether in sunken tubs of almost-Roman opulence or in pools, showers, spas and saunas — is an abundant supply of warm water.

Much of this advertising is (and was) directed at women and it is likely, as contemporary investigators have shown, that bathing and showering habits vary widely across the population according to sex and age (Randolph and Troy 2007; Hand *et al.* 2003; Gramm-Hansen 2005).

Since 1900 the amount of water used by the average Australian for bathing and showering appears to have roughly doubled. At the turn of the century a sanitary inspector's textbook noted that an average Sydney household consumed about 44 gallons of water per head per day. It reckoned 'that from 9 to 12 gallons of water per head [was] a necessity for a fairly cleanly existence, and this would not allow for baths to the extent desirable in this climate, especially in summer time' (Bruce and Kendall 1901: 55, 77). By the mid-1940s, per-capita consumption was approaching 70 gallons per head. Some of that increase was probably attributable to a modest increase in the frequency of bathing and showering, as advocated by health and beauty experts and made possible by the introduction of the bath-heaters. Only after the 1950s, however, when gas and electric hot-water services, and shower recesses, became standard fittings in most households, and the frequency of bathing and showering increased, did domestic water consumption rise to exceed 100 gallons a day. In the early 1950s, a family of two was reckoned to require about 20 gallons of water heated to 160 degrees Fahrenheit; a family of three, 28 gallons; a family of four, 35 gallons; and a family of five, 42 gallons, although some authorities recommended almost 50 per cent more (*Complete Household Guide*: 29; and compare *Ramsay's Architectural and Engineering Catalogue* 1949). By the end of the century, Australian households were using on average over a hundred gallons of water a day, over 20 per cent

of which was for showering and bathing. This appears to be about twice as much as the members of present-day English households, many of whom, influenced in part by climate, maintain the traditional routine of weekly baths and daily sponge washes (Shove and Medd 2006: 5; and compare Hand, Southerton and Shove 2003). Australian visitors have long despised the English aversion to daily showering. Entering a London pub, Barry Humphries' caricature of the ugly Australian, Barry Mackenzie, exclaimed that he was 'as dry as a Pommy's towel'. But with the imminent onset of climate change, the Australian habit of the daily, or even twice-daily, shower may no longer be the virtue it once seemed to be.

Washing

For over 150 years, the rhythm of domestic life in Australia was defined by the weekly routine of household tasks. Monday — the first day after the Christian Sabbath, when the whole family was supposed to rest — was almost universally observed as washing day, and for women this was the most labour-intensive day of the week. In the mid-nineteenth century, the wash for a large family could occupy the washerwoman from early morning till well into the evening. The laundry for an average family could require, in washing, boiling and rinsing, as much as 50 gallons of water. Standard routines often involved the use of a copper and as many as three or four large tubs for washing, blueing and starching (Webber 1996: 151–2; Wicken: 177–87; Hackett 1916: 267–92). Working people were sometimes called 'the great unwashed', a title that, as the artisan Thomas Wright explained, signified that they had 'black hands to earn white money', presumably in contrast to the white-handed plutocrats whose money was not as clean (Wright 1868: viii). Their work clothes, soiled from their labours, often required thorough boiling, blueing, starching and rinsing to be made clean. Most people, however, owned many fewer changes of clothes than we do, and changed them less frequently. An expert on housewifery in the 1930s advised 'at least a weekly change of underclothes', a standard that most people would now consider low (Blackmore 1931: 8). Men wore business shirts several times, changing the detachable collars each day, before washing the shirt itself at the end of the week.

That this regime remained unchanged for so long was, in part, a measure of the low status that laundry, and those who performed it, enjoyed in Australian society (Webber 2000). At the end of the Second World War only 2 per cent of Melbourne households owned a washing machine and few people expected to do so (Webber 1996: 175). Then, quite suddenly, it all changed. By 1952, 28 per cent of Australian capital city households had acquired a washing machine, the most popular brand being the compact, inexpensive and freestanding Hoover (Opinion Research Centre 1952: 10, 12). By 1959 ownership had risen to 60 per cent; by 1963, 71 per cent; and by 1977, 91 per cent (McLeod 2007: 45). The standard washing machine then had at least twice the carrying capacity of the

little Hoover and was almost completely automated. The advent of the washing machine also coincided with rapid changes in the mass production of clothing, especially the introduction of rayon, nylon and drip-dry or non-iron fabrics. Washing machine manufacturers now encouraged housewives to treat their washing machines as laundry baskets, throwing in clothes as soon as the wearers discarded them, and turning on the machine as soon, and as often, as they wished. In less than 20 years, the traditional Monday Washing Day had come to an end. The relative ease with which clothes could now be washed, dried and returned to the wardrobe removed a significant brake on the volume of clothes washed, and, in turn, on the amount of water consumed in the process. By the 1990s, the plunging price of mass-produced clothing, especially from China, and the gyrations of the adolescent fashion market further compounded the trend. Today, washing clothes accounts for approximately 15 per cent of domestic water consumption, a proportion that has hardly changed since 1900, even although the per-capita consumption of water has more than doubled (ABS 2004 in Troy and Randolph 2007; and compare Bruce and Kendall 1901: 55). The advent of the washing machine did not, of itself, greatly increase the amount of water used for washing clothes. Standard washing machine brands of the late 1950s used about 10 gallons of water for an 8lb wash, well under the 50 gallons used for the admittedly larger household of the 1850s (*John McIlwraith Buying Guide* 1959). The main effect of the arrival of the washing machine was not to wash the same clothes more efficiently, but to facilitate an increase in the size of people's wardrobes to accommodate the rapid changes of attire characteristic of a fashion-driven, consumer society.

Watering and wallowing

These shifts in the ways that families used water inside their homes paled, however, beside the extravagant, and increasingly volatile, consumption of water outside the home. During the 1970s, Melbourne water authorities calculated that while the average consumption of water inside the house had increased over the decade by 15 per cent, usage outside the house — for such purposes as watering gardens, washing cars and filling swimming pools — had increased by 52 per cent (Dingle and Rasmussen: 368). This was an era of rapid suburbanisation, when the quarter-acre block, the triple-fronted brick-veneer house and the Holden station wagon came to define Australians' conceptions of the good life (Davison, Dingle and O'Hanlon 1995: 2–17). The new suburbs of the 1950s and '60s were different from the terrace suburbs of the 1880s, and even from the bungalow suburbs of the 1920s. They were not only more extensive, with larger lots and bigger gardens, but they embodied new patterns of domestic life (Neutze 1977: 28–9). Houses were usually set back further on the block, with larger ornamental front-gardens; but the most dramatic changes,

with the greatest influence on domestic water consumption, occurred in the space that, until that era, had usually been known as the backyard.

The arrival of the inexpensive Hoover washing machine was the first step towards the alleviation of the routine drudgery of the Monday washday and an economical consumer of water. *Australian Women's Weekly*, 1951

*fits the family Purse!
does all the family Washing...*

The
HOOVER
ELECTRIC WASHING MACHINE

£43.10.0 (or easy payments from 9/- a week)

1. From sheets to socks it does the lot! All the week's washing for a big family!
2. Cuts out soaking, rubbing, boiling.
3. Washes whites in 4 minutes, silks and woollies in 1 minute.
4. Washes cleaner than you can by hand.
5. So gentle because the exclusive Hoover Pulsator doesn't yank and stretch the clothes but pulsates the water *through the weave*.
6. Cleverly sprung wringer takes even heavy articles with ease . . . makes broken buttons a thing of the past.
7. Tucks away in less than 3 feet of space when not in use . . . gives you more elbow room in the laundry.

And it's by the makers of the World's Best Cleaner

George Seddon has vividly described the functions of the suburban backyard, as he remembered it, in the 1930s.

It had all or most of: a woodheap, often with a rickety woodshed with a low roof of galvanised iron and a fence for the back wall; a washhouse with two tubs and a copper, with a grate beneath it to heat the water and a wire rack to hold the Velvet soap and Reckitt's Blue; a clothes line; one or more tanks on wooden tankstands, with mint or parsley under or near the dripping tap in a cut-down kerosene tin, a dunny against the back fence, so that the pan could be collected from the dunny lane through a trap-door; there might be a kennel for the dog, though he often slept under the verandah; there was often a crude incinerator; often an old oil drum, although the rubbish was also burnt in an open bonfire. There might be chooks, usually in a chook house along the back fence, and sometimes a sleep-out, usually a verandah enclosed with fly-wire, but often free-standing (Seddon 1997: 153).

The backyard, Seddon implies, was essentially a utilitarian space: it was a site for those essential domestic activities that could not be accommodated within

the house itself — growing food, storing fuel, washing clothes, harvesting rainwater, disposing of waste, human and otherwise, housing animals (compare Gaynor 2006). Already, in some Australian capitals, some of these functions, such as water-supply and disposing of human waste, had been outsourced or brought under the roof of the house, freeing the backyard for other domestic functions, such as housing and maintaining motor cars. Others soon became redundant: the woodshed fell victim to the gas space-heater, the washhouse to the washing machine, and the vegetable garden to the refrigerator and the supermarket.

The backyard, or ‘back garden’ as it was increasingly known, meanwhile began to evolve into a new kind of private domestic space shaped by aesthetic and recreational, rather than simply utilitarian, values. ‘The backyard’, John Murphy notes in his study of domestic life in the 1950s, ‘was a place of pleasure, but also of retreat from the public world’ (Murphy 2000: 27). Contemporary garden manuals characterise it as a zone of domestic seclusion, where the family could relax free from the prying eyes of neighbours and the stresses of everyday life. ‘The back’, a popular household guide advised, ‘should be treated with the same care and thought as the front area. A pleasant garden in which to relax, or to be able to have one’s meals in privacy, means much to the whole family’ (*Complete Household Guide*: 60).

Modernist architects had begun to re-conceive the relationship between the suburban house and its surrounds. For more than a century, the architect and historian Robin Boyd observed, Australian houses had been designed ‘to fight the un-English qualities of the Australian environment. The sun was shunned’ (Boyd 1952: 93). From the late 1940s, however, modernist theory combined with a new appreciation of the environment to break down the old division between indoors and outdoors. In *Homes in the Sun* (1945), the architect Walter Bunning showed how suburban houses could be designed with L-shaped plans, large picture windows, deep eaves, stone-flagged terraces, pergolas and patios that brought the garden into the house. The ideal back garden should include both a ‘Secluded Garden’ for private relaxation and an ‘Entertainment and Sitting Out’ area, with a patio, barbecue or pool for social activity (*Your New Home Garden: it's (sic) design, cultivation and planning*, Lothian Publishing Company [1958]).

These changes implied a significant increase in the use of water for both irrigation and recreation. The most striking feature of the modern garden, consuming as much as 90 per cent of the water used for irrigation, was the lawn (Walsh 2004: 15). ‘This is the age of garden lawns and the smallest home gardener accepts the lawn with all its maintenance as an essential part of the layout’, *Your New Home Garden* proclaimed in 1958. Green grass had always been a desirable feature of Australian gardens, a nostalgic evocation of England and a symbol of

the colonist's success in taming the Australian climate. 'Nothing can be prettier than an expanse of rich, green, close-mown lawn', *Coles' Australasian Gardener* noted in 1903. But without the services of a gardener to water and mow it, and a plentiful supply of water, the area of lawn that most householders could maintain was limited. The watering-can, aided by sparing use of the garden hose and sprinkler, and the push mower, were the suburban gardener's standard tools (*Yates' Garden Guide* 1918: 6–7; 1937: 7; 1941: 15). Typical suburban garden plans of the 1920s and '30s devoted most space to garden beds, paths and utility areas; lawn was often confined to the front garden where a circle of buffalo grass, the hardiest variety, linked paths and garden beds (Pescott: 9). From the 1950s, however, garden manuals began to recommend the use of rye, fescue and other finer, more water-absorbent varieties of grass and to make extensive lawns, with islands of garden and patio, a feature of their designs. Two technological developments — the nylon hose and the cheap motor mower — eased the task of lawn maintenance. Rubber garden hoses first appeared on the Australian market in the early 1900s (Blainey 1993) but they were prone to breakage and not everyone could afford one. 'A hose is a costly commodity, and the life of rubber is shortened considerably with ill-use', a 1916 gardening manual warned (*Searl's Ke* 1916: 24). The advent in 1945 of the Nylex plastic garden hose together with improved sprinklers and 'soaker hoses' offered suburban gardeners cheaper and more efficient methods of irrigation (Hewat 1983: 65–6). Even more momentous was the invention in 1952 by the Sydney engineer Merv Richardson of the Victa motor mower. This simple contraption, a two-stroke engine mounted on wheels and powering a rotary cutting blade, cost less than a quarter of the price of the older roller mowers. By 1961, Richardson had sold half-a-million machines and held 70 per cent of the market for motor mowers (Mason 2005). In less than an hour, the suburban householder could easily mow lawns that would have taken half a day, and considerable exertion, with an old push mower. The characteristic sounds of the post-war suburb were the drone of the motor mower by day and the steady beat of hoses and garden sprinklers, mingled with the shriek of children enjoying their cooling waters, on long summer evenings.

From the 1940s private swimming pools regularly appeared in articles on elite houses in the *Australian Home Beautiful*. They symbolised the life of luxury associated with Hollywood in the era of Esther Williams and Johnny Weissmuller. But few Australian families could afford the heavy costs of excavation, reinforced-concrete construction, tiling and filtering, chlorinating and pumping equipment required for a custom-built pool. The swimming heroes of the 1956 Olympics were products of the municipal baths rather than the private pool and during the 1950s and '60s thousands of local councils, energised by learn-to-swim campaigns, ensured that hardly a town or suburb in the nation was without its own 50-metre pool. The public pool represented a relatively economical use of water: on hot summer days hundreds of children and adults gathered to share

what would later, in private hands, offer recreation to no more than a few families. The first changes came in the 1960s, with the advent of the mechanical excavator, ready-mixed concrete and the pre-formed drop-in fibreglass pool. Even more significant was the appearance in the 1970s of the easily erected 'above-ground' pools marketed by the Clark Rubber Company. 'A private swimming pool was once regarded as an expensive luxury seen only in the homes of the very wealthy', Ian Wigney, author of a popular guide to pool maintenance, noted in 1977. Now, he explained, a private pool was 'well within the reach of the average wage-earner' (Wigney 1977: 7–8). Already there were an estimated 300 000 private pools in New South Wales alone. There are no comprehensive statistics of swimming pools or of associated water usage in this period, but it is fair assumption that the rapid proliferation of private swimming pools, spas and water features, along with more extensive irrigation of private gardens, contributed strongly to the 50 per cent increase in outdoor use observed by water authorities during the 1970s. Today in Perth, the only capital with official statistics, about one household in five has a swimming pool, a proportion unlikely to be exceeded in any other capital, except Brisbane (ABS 2004).

The Victa mower eased the labour of garden maintenance and, indirectly, boosted the consumption of water in Australian gardens. *Australian Women's Weekly*, 1956.

Conclusion

Per-capita consumption of domestic water peaked in the 1980s. Under the combined effects of 'user-pays' pricing, regulation (for example, restricted-flow shower heads, dual-flush toilets, drip-irrigation systems, water restrictions, and so on), public-awareness campaigns, and a prolonged drought, usage has since declined, although not enough to dent the underlying problem of water insufficiency.

Australia's current domestic water-using regime is a product of long-term and short-term, technological and cultural influences. Some of these may be

easily modified; others — and not just the technological ones — may be changed only with difficulty. One of the effects of urbanisation and of the adoption of large-scale engineering systems of water supply and sewerage was to make less invisible the connections between the behaviour of water users and the natural systems on which they ultimately depend. This disconnection may have been reinforced by the adoption of market systems of delivery that tended to commodify water, encouraging users to expect that supply should simply expand to meet demand. Only when we recognise the historical and cultural forces that have shaped our present patterns of dependence on water for drinking, washing, watering, flushing and swimming, and institute cultural practices, technologies and feedback mechanisms that inculcate habits of sustainable water-use are we likely to ameliorate the present crisis.

The adoption of water-carriage as the main method of sewage disposal, for example, was the product of ideas characteristic of the mid-nineteenth century, but the assumption it has created, that human-waste disposal should be 'unseen, unostentatious [and] self-acting', dies hard. Any move towards a more environmentally sustainable system of waste disposal, such as composting toilets, would not only have to modify a massive infrastructure of underground pipes and pumping stations, but overturn a deeply engrained 'somatic culture' of odour, purity and danger.

Other domestic practices, such as the habit of daily showering, were shaped by more recent technological changes, notably the availability of 'instant' hot water, and cultural shifts, especially of hedonistic preoccupations with bodily comfort, privacy and self-care. Could bodies be pampered by less environmentally wasteful means? Or does the solution lie in technological fixes, such as water recycling, or the installation of monitoring devices such as shower-clocks? Showering and bathing is, by its nature, the most private form of water consumption, and hence the least open to external monitoring and control, although shorter and less-frequent showers would both reduce consumption and improve health, especially through the prevention of skin disease.

The consumption of water for clothes-washing may be reduced somewhat by the adoption of front-loading water-efficient machines, although the volume of washing is probably determined much more by the size of people's wardrobes and the rapidity with which they ring changes of garments from day to day and even hour to hour. Any move to modify this pattern logically begins, not in the laundry, where water is used, but in the department store, where clothes are bought, and in the nation's bedrooms, where decisions are made about to what to wear and when.

Policies to develop more-sustainable water-use in Australian cities have concentrated on the most visible site of water consumption, the suburban garden. It is easier to monitor use outside the home than inside, and the large amounts

of water used for gardening and swimming, especially in cities with low rainfall and high average temperatures, seem to offer more scope for conservation than activities like bathing, showering and washing, which stand higher on the city-dweller's 'hierarchy of needs'. Outdoor water consumption varies considerably across Australia's cities, from approximately 173kl per household in Perth to 73kl per household in Sydney (State of the Environment Report). High rainfall and high population densities both probably play a part in Sydney's lower outdoor water consumption. Whether policies favouring greater urban concentration elsewhere would produce more-sustainable patterns of urban water-use, however, is much more doubtful. There is little evidence that flat-dwellers actually use less water per capita than residents of traditional family dwellings (Troy and Randolph 2007). Furthermore, any economies in water consumption from urban consolidation would be likely to appear only slowly and would have to be set against the reduced opportunities for water recycling on larger lots, the increased stormwater run-off from the greater area covered by impervious roofs, drives, roads and yards, and the subtle changes to micro-climate brought about by the loss of vegetation. Cities, as Edwin Chadwick was among the first to recognise, are complex systems in which the causes and consequences of human actions are manifold and often contrary to our expectations. There are no shortcuts and panaceas for the water shortages that have now become endemic in Australia's cities.

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