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Changing cultures of water in eastern Australian backyard gardens

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Keywords
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Changing cultures of water in eastern Australian backyard gardens

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Changing Cultures of Water in Eastern Australian Backyard Gardens

Abstract

Research into diverse cultural understandings of water provides important contributions to the pressing global issue of sustainable supply, particularly when combined with analysis of relationships between everyday household practice and larger sociotechnical networks of storage and distribution. Here we analyse semi-structured interviews with 298 people about their 241 backyards in the Australian east coast cities of Sydney and Wollongong, undertaken during the 2002-03 drought. Water emerged as an important issue in both consciousness and practice. In contrast to a number of other environmental issues which stimulate more polarised responses, a commitment to reducing water consumption was shared across the study population and manifest in a variety of changed practices. However these aspirations are in tension with the pleasure derived from water, and expressed desires for more watery environments. This work contrasts with and extends other studies that have emphasised the perceived separation between the modern home and the networks of production that sustain it. We argue that it is in the relationship between house and garden that people see, understand and participate in the network of water storage and distribution. Their active engagement with these processes enhances their capacity to manage and reduce consumption.

KEYWORDS: water consumption, drought, interview, gardens, suburbs, home

Introduction – cultures of water

Sustainable water supply is recognized as a pressing environmental issue, particularly in urban areas (Jenerette and Larsen 2006). In Australia, water has always been a problematic underlying issue for both rural and urban settlement (Lake and Bond 2006). Recent drought has returned water to the forefront of public consciousness. In debates over dam expansion, recycling sewage, desalination, watering lawns and washing cars, a key motif that swirls around is that Australians need a 'culture change' in relation to water. It is said that we need to change attitudes of profligacy, developed in the well watered ancestral lands of northwest Europe, and attune both attitude and practice to the realities of living on the driest inhabited continent on Earth.

But what would constitute such a culture change, and how would we recognize it? In this paper we take an ethnographic approach to the question of urban water use through the lens of the backyard garden, drawing on interview material from a broader study to examine the ways in which people think about and use water. In arguing that there is a significant cultural shift occurring, we are not discussing here the actual levels of water consumption. Rather we offer a complementary perspective that seeks to understand everyday practices and habits, and the processes that reinforce or change them. We have been influenced by Shove's argument for a shift in the focus of social environmental research 'so as to comprehend the collective restructuring of expectation and habit'(Shove 2003: 4). Through a detailed focus on everyday practice, Shove shows, for example, how changes in what is considered

‘normal’ with regards to personal cleanliness and laundering have implications for water and energy consumption. Everyday knowledge and practice is an important issue for water managers in our study area, with garden use accounting for 25% of all household water use in the Greater Sydney area (Sydney Water 2003). We demonstrate strong connections between indoor and outdoor water use; water is saved inside the house for use on the garden.

This study contributes to a growing body of work examining commonalities and differences in cultures of water (Strang 2004, Allon and Sofoulis 2006, Jackson 2006, Gibbs 2006). In a detailed review of a predominantly anthropological literature, Strang (2005: 115) argues that ‘though cultural[ly] specific and diverse in form, the broad themes of meanings encoded in water are similar in substance, providing important undercurrents of commonality’. These themes include water as a matter of life and death, as a generative and regenerative force, as the basis of identity, and as a symbol of power and agency. Strang locates the source of these commonalities in two main factors; the characteristics of water itself (fluidity, transmutability, aesthetics), and the shared physiological and cognitive processes that shape human sensory experience of its qualities.

Our theoretical framing draws on moves within geography and elsewhere to go beyond ideas of nature and society as separately constituted entities. New conceptualisations framed around hybridity and networks, as articulated for example by Latour (1993) , Swyngedouw (1999) and Whatmore (2002), provide lines of approach to the complex entanglements of humans and nature, and to earth surface processes pervaded by human agency. In an age of accelerating urbanisation, some of

the most stimulating work illustrates ways in which cities are themselves saturated with nonhuman nature, and enmeshed with nonurban landscapes through intricate networks for the transfer of goods and services (Cronon 1991, Swyngedouw 1999, Gandy 2002, Braun 2005, Heynen et al. 2006).

We build particularly on the work of Kaïka (2005), who has provided an important study extending analysis of the modernist urban denial of nature to the space of the home, using the example of water. She argues that

> the social construction of the Western (bourgeois) home as an autonomous, independent, private space is predicated upon a process of visual and discursive exclusion of undesired social (anomie, homelessness, social conflict, etc.) and natural (cold, dirt, pollution, etc.) elements… while the familiarity of the bourgeois home is dependent upon the visual exclusion of social and natural processes, the very creation of the safety and familiarity of the modern private home is nevertheless predicated upon the domestication of natural elements (water, air, gas, etc.) through a socio-economic production process. (pp. 7-8)

Kaïka makes the point that while the processes of social exclusion in and around the home have been extensively studied, for example in Sibley's (1988, 1995, 2001) influential work on sociospatial classifications and boundaries, the exclusion of nature and socio-natural processes have not been adequately researched or documented (p. 52).

The above studies draw in turn on the work of anthropologist Mary Douglas (1966). In illustrating how different cultural groups order the world, Douglas argued that the classification systems (albeit themselves all different) leave certain things not

belonging. In different ways, these come to be labelled dirt, i.e. disorder, or matter out of place. Kaïka argues that

> Natural elements are not in fact kept altogether outside the modern home; but rather are selectively allowed to enter after having undergone significant material and social transformations, through being produced, purified, and commodified (Kaïka 2005, 64)

Thus water is purified to become 'good' nature before it enters the house, and once it becomes 'bad' nature, in the form of sewage, it must not only be removed, but be visually excluded. In fact of course, both the purified water and the sewage are hybrid forms dependent on complex material and social networks. The familiarity and comfort of the bathtub or swimming pool, Kaïka argues, require those networks to remain invisible, and the space of the home to remain clean and pure.

As Sibley, Kaïka and Shove have shown, these processes of spatial cleansing and purification are intensified by consumer capitalism. Advertisements for washing powder, air conditioners, for houses themselves, all tap into fears of dirt and desires for pure spaces. Imagery promoting 'cleanliness, purity, whiteness and spatial order, images reflecting the idea of a pure inner self' (Sibley 1995: 78) are particularly widespread in homemaking media. The visual representation of homes and gardens in these magazines always excludes the impure – the dirt and the mess (unless in a before and after shot that illustrates the process of cleansing).

Our methodological emphasis on everyday practice and experience in the outdoor part of the home extends these approaches. Using the example of water, we show how urban inhabitants understand and intervene in the production networks underpinning

the home, themselves contesting the false separation of purification by tolerating 'dirty' water and rendering networks visible.

A number of recent studies have analysed 'droughts' as complex events in which rainfall scarcity, public discourse, changing regulatory regimes, technological networks and private behaviours are entangled (Nevarez 1996, Haughton 1998, Bakker 2000, Kaïka 2003). Full discussion of these wider networks in eastern Australia is beyond the scope of this paper, but our fine grained focus here on household behaviours provides important points of intersection with these other studies. Consumer resistance to water conservation measures, and continued expectation of water as a 'naturally' abundant good has been documented in cases where there is a lack of confidence in a privatised supplier (Haughton 1998: 426, Bakker 2000: 16) or a discursive disconnect between the householder and the networks of technology and supply (Strang 2004, Kaïka 2005). In Strang's analysis, the combination of privatisation of supply, water technology that encourages visions of an unlimited resource and increasingly individualised social lives has created a situation where, 'domestic users are… impervious to efforts to conserve water' (p. 208). We argue that, as a site where these networks are rendered partially visible and with which people engage on a daily basis, Australian domestic gardens provide a contrasting example; they are both arena and agent of changing practice.

Study area and methods

This study is part of recent work in the ethnographic tradition that analyses how people talk about and interact with water (Kurz et al. 2005; Strang 2004, 2005; Sofoulis 2005). In bringing to awareness 'routinised habits and interactions, retrieving

them from the wordless background of 'practical consciousness', and subjecting them to scrutiny and reflection' (Sofoulis 2005: 448), such research provides an important complement to more quantitative analyses of both attitudes to and consumption of water (e.g. Kolokytha et al. 2002, Nielsen and Smith 2005, Hurlimann and McKay 2007, Zhang and Brown 2005). As Sofoulis (2005: 448) argues, 'who normally entertains an attitude about a tap, a drain, or a sewage pipe?' Yet it is precisely everyday objects such as these that connect consumers and householders to the wider socionatural networks that constitute 'waterscapes' (Swyngedouw 1999), so understanding habits of interaction with taps, pipes and buckets provides a crucial analytical link. Further, an emphasis on everyday practice can throw light on contradictory behaviours such as observed differences between attitude and practice (Askew and McGuirk 2004, Sofoulis 2005: 446), unrealistic perceptions by consumers of their actual water consumption levels (Kolokytha et al. 2002: 399) and the use of discursive strategies to justify or excuse environmentally damaging practices (Kurz et al. 2005).

This paper uses interview material from a study of 241 backyards and 298 backyarders[1](a number of couples were included) in Sydney, Australia's largest city, and Wollongong, a restructuring industrial city of about 300,000 people just south of Sydney on the Pacific coast. Our sampling strategy was designed to encompass the socioeconomic and geographic variability in each of these areas (Commonwealth of Australia 2002)(Figure 1). Participants were recruited through media advertisements and appeals, letterboxing, snowballing from other participants, and by liaising with community groups. The period of fieldwork, 2002-03, corresponded to a time of significant drought in southeastern Australia.

FIGURE 1 ABOUT HERE

The broader study used the backyard as a lens through which to analyse a variety of engagements between humans and nonhumans (Head and Muir 2006, in press). Each backyard was visited and a semi-structured interview undertaken onsite with the participant/s by one of a team of three researchers, including the two authors. Questions related to the activities of different members of the household, changes that had occurred over time, people's feelings about the space, what sorts of plants and animals were considered to belong, wider environmental attitudes and practices, and major influences. None of the initial questions was explicitly about water, but water emerged consistently in conversations about a variety of different topics. The backyard was mapped and photographed, and checklists on the demography of the household, the structures in the backyard and the biogeography were completed. The interviews were transcribed and imported into the qualitative data analysis program, N6. Initially, all water comments were content coded for the context in which they were talked about and the practices described. Using a discourse analysis framework, we coded for different kinds of motivations and investments.

Watery discourses and practices

By the end of winter 2002 there was considerable discussion of the drought in the Australian east coast media. However, people were already talking about water well before this, and it seemed to us as interviewers that the drought exacerbated an existing consciousness rather than creating a new one. Media influences in relation to water consumption and the drought were diverse and pervasive during this period. Messages about water consumption came through all forms of everyday media, even

down to the reporting of dam levels on the TV news. With the imposition of water restrictions there was extensive advertising in the daily press, as well as mailouts to individual households.

Participant responses to a situation of water shortage indicate detailed observations and understanding of entangled social and ecological systems. They talk of daily and seasonal weather patterns; the behaviour of ants, birds, mosquitoes, soil and plants; managing the time and habits of everyday life; and the strengths and weaknesses of the networks of water transport within their house and garden. As a dimension of everyday life, water practices are tied closely to the gender division of labour within particular households, although that theme is not developed fully here.

Within the context of the backyard, environmental discourses concerned with conservation and a dry continent awareness accounted for almost half the responses (n = 110). Examples of the practices could include planting native plants, mulching to reduce water loss or installing a water tank. Another strong theme, but less cohesive in its articulation, was 'desire', which encapsulated all wants, needs, dreams and desires surrounding water. Some of these were desires for water tanks and other water saving devices linked to action in the near future, but many more were desires for a water feature or dreams of having a swimming pool. When asked to imagine an 'ideal' backyard, more than fifty participants included water in their musings. 'Saving and waste' represented a continuation of family traditions, a disdain for waste and a means to save money (n = 39). Finally, 'pleasure' was an investment strongly associated with 'time-out' while watering the garden, as well as the (often cited)

tranquil effects of having ponds and water features (n = 26). This theme is closely linked to desire.

People expressed several different and sometimes contradictory opinions. To unpack the complexity of positions a further layer of analysis looked at participants' perception of agency and their ability to effect change at different geographical scales.

Environmental agency in relation to water

When canvassed on their attitudes to the environment, participants were most likely to discursively construct water as a precious resource that has been mismanaged by successive governments. Around half the participants who talked about water as an environmental issue made observations on 'big' water issues such as farming use, drought, falling dam levels and water quality. These comments expressed concern, but also a disconnection between water in the environment and their own use of water (Table 1). Overt or implied responsibility to 'fix the problem' rested with the government; for example, 'wish we could get some of these politicians to put in another dam or two. It's ridiculous'.

TABLE 1 ABOUT HERE

A sense of personal agency defined the other half, who explicitly linked water as a major environmental issue with their practices in the backyard. Eight-five participants described a range of practices - some new, many embedded into daily routines – that illustrate a changed consciousness to patterns of water use. Some of these are detailed in the following sections. Additionally, forty-four participants used water restrictions

and drought as a vehicle to discuss how these affected their water use. While comments about restrictions refer to enforced change, a number of creative solutions to save water were adopted (for examples see below). However, while such positive interventions could contribute to a sense of feel-good activism, in some cases it also obscured other activities of intense water consumption. One such example was a discussion focused solely on the water hardy natives in the backyard with no mention of the adjacent swimming pool.

In contrast, eighty-seven participants described watering practices not associated with any particular water consciousness. This is partly to do with backyard gardens needing water to survive. It is also a recognition that not all utterances are, nor need be, attributable to a particular discourse or position. However, more people used water consciously than simply used water.

Tensions arose when participants compared their own level of concern with neighbours, the general public, authorities and the government. People positioned themselves and others as either responsible users of water through their concerns and actions or as water wasters. For example, wanting a water tank accorded participants a sense of environmental responsibility, if only by implication. The relative health of the lawn was seen as another marker of environmental responsibility, with green lawns a signifier of waste and dead grass signifying water conservation. Imperatives to change how the Australian public think about water were articulated as a unified 'we', such as 'we just take it for granted, should be more education on how not to use water'.

The divergent patterns of agency summarized in Table 1 seem to be important elements in the potential for changing behaviours, and we return to these in the final discussion. The themes presented in the section below summarise the most consistent and widespread discourses about water. Each is connected to examples of specific everyday practices in ways that both increase and reduce water consumption.

Transforming habits - the bucket in the shower

In Kaïka's (2005) reading of urban environments, the networks of water supply are hidden from or ignored by domestic consumers until something goes wrong. Yet in these backyard gardens there is often quite detailed knowledge of these networks, whether for the drainage of excess or conservation of scarce water. A number of people explicitly visualised the pipes that brought the water to different parts of the house and garden, and recognised the implications for conservation.

> Because our ensuite is right at the front of the house, you can use two and a half litres of cold water before you get your hot water through. So we trap that water as well. The same at the sink here at the back. It's just the set up of the tap. You turn it on. You hear the water coming through. You do what you have to do, you turn it off and it keeps on running. So again we've got a bucket in that sink and we trap all that water. For quick rinsing and stuff like that I just rinse my hands in that. So you get four litres of water in no time. (Robert)

An important reason that people have detailed knowledge of the networks is that they are active agents within them. Participants recounted both creative and banal strategies to conserve and reuse water: the jug beside the sink, the bucket in the shower, the basin of vegetable washing water, letting the lawn go, not planting

annuals, water saving shower heads, rain soaker crystals, mulch and water tanks. Water gathering is the term we use for a loosely defined set of practices that were informal, irregular or unstructured in nature and differed from participant to participant. They included the practice of collecting water in containers of varying sizes from overflow outlets such as downpipes, hot water systems and leaking taps; setting containers out to collect rainfall; and manually collecting water from the domestic spaces of kitchen and laundry and bathroom. Buckets were the main tool, with many accounts similar to Stella's:

> I have a shower in my bath… and I put the plug in the bath when I have a shower, and then I take buckets of water out to water any plants with. And I also use that water in my toilet and my washing machine. (Stella)

These activities were usually but not always described by women. Their informal and ephemeral nature made them difficult to document formally, but like Allon and Sofoulis (2006) we believe these play a key role in transformations of habit and practice. They were sometimes highlighted by opportune moments; Moira was prompted to talk about her water gathering practices by a sudden downpour, which interrupted the interview.

> We've actually got the garbage tin there, there's not a lot of rain but we're trying to collect a little off the drain pipes there and I've got plastic buckets there…so that we can use that on the garden instead of using the taps. (Moira)

For a number of people, responses to the drought built on longstanding practices based on an ethic of not wasting. Several elderly Macedonian women in Wollongong shared a generational practice of collecting water in buckets for use on their extensive

vegetable gardens. But with limited English and a fear of government surveillance, they had also interpreted the media campaigns about reducing consumption. They worried that their water consumption was being monitored by neighbours or authorities.

> I'm afraid of being fined for using too much water. It's not for the money that you pay for the fine, it's the actual knowing that you've been fined, punished in a way for doing something that shouldn't be done. (Nada)

Infrastructure for excess and scarcity

In the previous section we emphasised human involvement in informal water networks. Here we use a set of examples of more structured systems, for both watering and drainage. An issue across the study area, but particularly on the narrow coastal plain of Wollongong, is that the necessity of disposing of excess water during short-lived flood events is of ongoing concern even in periods of drought. Intense storms and flooding, such as those of August 1998, are strong in people's memories. In parts of Sydney, local council regulations stipulate that stormwater runoff has to be contained on the property, so people have detention basins in their backyards. (Stormwater runoff can of course be exacerbated by the expansion of impermeable surfaces in urban areas.)

Construction of drainage and storage systems to utilise water is an activity that provides a different sort of pleasure relating to water; the pleasure of construction, resourcefulness and practicality. This is mostly a male pleasure.

> The other time I enjoy coming down here is just before summer kicks in, just come down and play with the watering system; I get a buzz out of that. I've

> been told by the bloke at the irrigation shop… “irrigation systems are big kids’ Lego”, that’s what he reckons. (Doug)

For Doug, the playfulness is directed towards a useful purpose, as various pipes are configured to direct the stormwater runoff onto different levels of the garden. Elaborate systems such as these are not usually primarily constructed to harvest water during droughts, or to water gardens, although they can serve those purposes. Geoff’s concern was to redirect water in more appropriate ways in his backyard and utilise the stormwater runoff through the use of a soak pit.

> It's a boardwalk but it's a boardwalk that's been built for a purpose. It's a boardwalk that is actually a soak pit. So, we're hemmed in by neighbours, so what do you do with the runoff? You put it down a big long pit full of rubble to disperse it across your land and that's what this thing is; it's a long soak pit…we have a plan, that's why the big pipe is sticking out the far end of it to pipe out, downpipes our guttering runoff, stormwater into this soak pit and it will also help water Monique's plants from time to time whenever it rains. (Geoff)

While women spoke about these infrastructural aspects of water management, they were often not the material actor in the process of redirection and they spoke of their husbands or partners putting in place systems to redirect the flow of water.

Infrastructural systems at the household scale become agents in the process, particularly when they create rather than save work, for example in requiring more maintenance than expected. They are also used in different ways from those which were originally intended. Watering systems are usually promoted as a way to reduce water consumption, but a number of people reported using them essentially as a time

management tool. Either they do not have time to water by hand, or they are not around at the optimal times for minimising evaporation, i.e. early morning and evening. The technology can also be recalcitrant in not delivering the envisaged peace and tranquility, as explained by Boyd, a landscape gardener, in a critique of water features.

> The reality is a lot of those, you put them in your garden, you spend all your time running to the toilet because of the noise of them… we'd go to maintain them and they'd be all grotty, because they wouldn't turn them [on] because they couldn't stand the noise… So that's the reality. (Boyd)

Consciousness of a dry continent

Consciousness of saving water, while it may have been exacerbated by the drought, was not necessarily a recent thing in people's lives. 'The biggest problem this country has is the lack of water', said one woman, who went on to connect her present water saving practices to a childhood on the land and the normality of scarcity. The connection to rural or agricultural childhoods and living with tank water was common. Several people related awareness of the harshness of the Australian environment to a more specific experience in their lives.

> Dave and I went travelling around western Victoria and NSW on a motorbike before we had kids and there were a lot of areas out there that were badly affected by drought… I was totally shocked and just seeing animals that were dying in paddocks, and I can still recall the smell, it was just so bad. And I think we came back here and I think we were just like "that's amazing", we just take it for granted so much and we are living in the driest continent so we're looking at water tanks for the front and the back and for recycling of as much water as we

> can. Yeah, and I think even when the drought breaks, I think we'll continue doing it. (Moira)

> We travelled across the Tanami [Desert] last year and I gained a sense of the real fragility; it gave me such a deep sense of kind of touching almost the womb of the land and realising how fragile it is, how precious things like water is and we're looking at a way to put water tanks in. (Maxine)

These stories both demonstrate direct links between a specific life experience and a willingness to change consumption patterns. At first glance both Moira and Maxine seem to have used that experience to 'come to terms' with a dry Australia. But this assumption needs some examination.

The connection between the Tanami and Sydney in terms of water is, in a material sense, far fetched. When Barb tells her teenage daughter in the shower to 'save some water for the farmers, Jess', she is expressing a broad consciousness of the arid continent rather than a belief that if Jess showers for less than twenty minutes in Sydney, the farmers in western New South Wales will actually get the water. There is no strong relationship between water availability in the two places, either in terms of where the rain falls or where the storage and distribution infrastructure moves it to. The connections made by Moira and Maxine are totally symbolic, although no less powerful for that.

Water, pleasure and desire

Backyarders articulated a set of sensual and embodied engagements with water. It is a part of nature that is usually a source of pleasure, as illustrated first by discussions of

the pleasures of watering. A number of women described a time of relaxation at the end of a day's work. This enjoyment of watering goes so far as to influence the watering systems they install, several describing deliberate decisions to not install drip irrigation systems in at least part of their garden so that they could continue to enjoy hand watering. Themes of pleasure, tranquility and meditation came through in these conversations.

> I water a lot in summer and when I'm miserable I talk to the plants; I go out and let the plants cheer me up. And they tell me when they're thirsty or over watered. (Betty)

Men from diverse backgrounds also described the pleasures of watering in quite sensual ways.

> At least a few times a week I get out there in the morning and I water the garden. For me that's before I start my day and that is a very pleasurable activity, and as I water the different pots that are on the wall I check on the well being of the plants just to see how they are travelling … and they're like my babies. And so I start my day with that uplifting experience and that's a major activity for me…. I jog around the street, come back here and while I'm cooling down I'll water the garden and just check on the health of everything. (Patrick)

When asked what he liked about hand watering, Fred connected his own need for liquid refreshment with those of the plants:

> To me it's, obviously, you know, that I like a drink. To me it's something that I've done for the past thirty years that I can remember, even when I was at Punchbowl. I love - particularly after I've mowed the lawn - to water and have a beer; have a beer and water…

As Patrick indicated, this is a time when detailed observation of processes occurs. People do not just water, they observe the activities of ants, and monitor the growth of plants. This is something that is lost if watering is an automated process in which the human does not have to participate. However, these are certainly not universal feelings; Jessica, for example, said ‘I hate watering. Some people love standing there with the hose and I hate it’.

An extension of these pleasures is that participants voiced desires for more water in their everyday environments; swimming pools, ponds, streams, and water features were called on to bring serenity and the touch of water. Such desires are both fed and gratified by the lifestyle industry. Water is very clearly connected to visions of a nature that is tranquil and peaceful. In speaking about water features, people referred to beauty, the sound of running water, soothing natural sounds and the notion of creating a restful place within the garden.

> having been in a city, close to the water, every day I passed the water and there's something tranquil and relaxing about that. Again, that's nature. (Diana)

Justin described his swimming pool as not being about swimming, but ‘about having water, being around water’.

The pleasures associated with water influence consumption in opposing directions. Hand watering can increase or reduce consumption depending on how it is undertaken. If acted on, the set of desires focused on water features and swimming pools would increase the consumption of water.

A shared commitment and its tensions

In contrast to the diversity of their views on other issues (e.g. the role of trees, the importance of native species, love and hate of lawns (Head and Muir 2004, 2005)), recognition of the importance of water conservation was the nearest thing to a shared environmental commitment across the study population. While a few thought the government should have built more dams, none contested the idea that as a society we need to change our ways when it comes to water. This is consistent with Kurz et al.'s (2005) finding in Perth that 'water was constructed as being a finite, precious and shared resource that must not be wasted' (p. 616), in contrast for example to energy resources. However there is as yet a dearth of similar studies that would allow us to make detailed comparisons with other places.

We are not suggesting that these Australians are water saints. By their own accounts, practice falls short of intention, and different habits counteract each other. There is tension between an obvious willingness to make significant changes in everyday practice to reduce water consumption, and the throbbing but only partially leashed consumer desires to create more watery environments (see also Askew and McGuirk 2004). This is particularly the case for younger, more affluent and well educated participants who do not have the underlying ethic of frugality that is second nature to people old or poor enough to have experienced material scarcity. In this respect there are some age and class differences apparent. Although middle class participants dominated our sample, much of the discussion around water issues was generated by participants from the lower-middle to low socioeconomic status groups[2]. This could be partly explained by the correlation of socioeconomic status with age; many retirees fell in the middle to lower groups and some were post-World War II migrants. Older

participants shared a concern with waste and saving water and many migrants brought with them generational practices of frugality.

Willingness to change is conditional, particularly on government and industry altering their own practices. Voluntarism is fragile when the kids are screaming for dinner, when work patterns dictate time scheduling or when injustice is perceived:

> I get really angry with the people up the road who you see out there, and they've got a wonderful flower garden and grass, and ours is brown because we're trying to do the right thing, and they are just blatantly wasting. (Barb)

Nevertheless we argue that urban Australia has begun its much needed culture shift in relation to water, and are waiting for governments and other authorities to go with them. Much of this change is hidden in the daily rhythms of household life, encapsulated in the metaphorical and material symbol of the bucket in the shower. Similar trends have been observed by Allon and Sofoulis (2006), and there is some independent evidence emerging that householders are reducing water consumption (Sydney Morning Herald 11.2.06).

Analysing change – visibility, connection, practice and agency

How might we explain this suggested moment of change, and how should we compare a fine-grained trend identified ethnographically with other studies in which networks of broader processes are traced? In this section we make two points of explanatory connection.

Visibility and connection

In Kaïka's analysis the modern home is a site in which the creation of familiarity and comfort depends on the visual exclusion of the (water, among other) networks on

which those characteristics depend. Nature is allowed inside only once it has been purified, and is removed once it becomes 'bad' nature, such as sewage.

> While the dweller experiences the familiarity and comfort of his/her domestic tap, bathtub, or swimming pool, the intricate set of networks that produce this bliss remains invisible to him/her, hidden underneath and outside the house. It is precisely this visual exclusion of production networks, of metabolized nature and of social power relations, that contributes greatly to the production of a sense of the familiar inside one's home… although the modern home is ideologically constructed as independent and *disconnected* from natural processes, its function is heavily dependent upon its material *connections* to these very processes… (Kaïka 2005: 65) (emphasis in original)

The creation and maintenance of this purified nature are driven by and drive increasingly consumptive practices, in which technology itself is also an actor, as elaborated by Shove (2003). Strang (2004) has made a similar argument in her anthropological study of water in the Stour Valley in England. (In)visibility can take a variety of forms; for example Nevarez (1996) shows how changes to water management structures in California rendered them less visible and accountable.

In contrast, when it comes to water, our study participants are not in ignorant bliss of the networks that produce their domestic comfort. They are catching water off the roof, struggling with the connectors on their drip systems, and digging in drainage systems. They can see that the water cycle has been disrupted when it has not rained for months and street trees are dying. This is not perfect or full knowledge, but in different ways it is detailed, ecologically specific and engaged with on a day to day

basis. In an echo of earlier times in history, busy women are prepared to become water carriers.

While there are clearly a number of influences on environmental practice, not all of which we have been able to explore here, we contend that the visibility of and human participation in the networks of domestic water supply, facilitated by the outdoor context of the garden, is an important reason for the differences between our study and those referred to above. This may also help explain why, contrary to expectations, recent per capita water consumption in separate houses with gardens in Sydney is little different to that of apartment and unit dwellers (Troy, Holloway, and Randolph 2005).

Practice and agency

Further, people have shown themselves prepared to tolerate 'bad' or 'dirty' nature, within certain limits. The bucket in the shower catches and holds (soapy) bodily wastes rather than insisting they be immediately expunged from the house. Used washing machine water, also containing bodily wastes, goes onto sites of food production. Basins containing dirt washed from vegetables and hands are allowed to sit beside the sink until someone is free to empty them on the garden. We repeat, these are not universal trends, but they are robust across our diverse sample. In terms of Sofoulis' (2005: 452) distinction between Big Water and everyday water, it is clearly easier for people to connect their own agency to the latter, as we summarized in Table 1.

Water and the garden each have a degree of their own agency in these processes. Water is a particular kind of nonhuman – people understand it as a cleansing and tranquil part of nature, as expressed in their positive desires for water. These cleansing qualities likely raise people's threshold of tolerance as it becomes dirty. Thus the bucket in the shower is more widely tolerated than other sorts of 'matter out of place' in the backyard, like fallen leaves and bark, or weeds. Water occupies an interesting place along the living/dead, organic/inorganic continua; the dynamic nature of people's engagement with it suggests that it is widely understood as part of a living nature.

Nor is the presence and the value of the garden coincidental in these practices. The backyard garden is not a passive backdrop against which pre-existing attitudes are played out. Rather it is in the relationship between house and garden that people see, understand and participate in the network of water storage and distribution. They know their own power and they understand where and how to make a difference. Further, people love their gardens and are willing to work hard to save them. The passion engendered in the backyard, and the everyday, habitual nature of human engagements with the nonhuman world, provides an under-rated human resource of considerable potential in the necessary shifts towards more sustainable cities. We believe it should be regarded with cautious optimism.

Conclusions

In this study, water emerged as an important issue in both consciousness and practice of suburban householders. In contrast to a number of other environmental issues which stimulate more polarised responses, a commitment to reducing water

consumption was shared across the study population and manifest in a variety of changed practices. Most of these practices are hidden in the rhythms of daily life and can only be unearthed using qualitative research methodologies. Such methodologies also allow contradictions to be brought to light. The strongest example here is that aspirations towards water conservation are in tension with the pleasure derived from water, and expressed desires for more watery environments.

Our work contrasts with and extends other studies that have emphasised the perceived separation between the modern home and the networks of production that sustain it. We argue that it is in the relationship between house and garden that people see, understand and participate in the network of water storage and distribution. Their active engagement with these processes enhances their capacity to manage and reduce consumption.

Our argument that domestic gardens are a site where changes to more conservationist water practices are occurring should not be read as advocacy for increased devolution of responsibility to the private householder under neoliberal water management regimes. Nor is it in itself an argument for suburban expansion. However, there is little support in this evidence for the construal of gardens themselves as environmental problems, and considerable support for the idea that more localised strategies for water collection, storage and distribution are likely to garner more support and active connections than Big Water schemes such as new dams. The widespread evidence of willingness to change practices suggests that there is underlying support for stronger government action on water, provided it is done in a way that maintains and utilises these human connections. The different scale of

analysis provided by domestic ethnography adds a broader range of potential solutions to the complex issues of sustainable urban water supply.

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Figure 1 Study area. Main areas of focus in Sydney and Wollongong shown in upper case.

Environmental discourse	**Participant sense of agency**	
	decreases ⇐——————————⇒increases	
Water as a precious resource articulated as;	'big' water issues; farming use, water quality, falling dam levels	domestic water practices; mulching, water gathering, plant choices
deemed;	government responsibility; infrastructure investment - 'more dams'	individual responsibility; new and creative solutions – soil water crystals, diverters
Drought articulated as;	natural disaster	natural phenomenon
needs;	government action; restrictions (enforced)	individual action; reduction (self imposed)
participant;	self monitoring and perceptions of surveillance - 'I want my plants to grow but I don't want to be getting into trouble, you know, wasting water'	increased self monitoring and moral positioning – 'I never did (hose down the concrete) even before the drought'
relevance to the cultural shift;	- compliance to external authorization often conditional (and sometimes resistant) - short term focus on restrictive water practices – less likely to maintain practices	- participation in water reduction measures are internally motivated (as well as in response to external authorization) - adding to embedded practices ensures cultural shift maintained

Table 1 Participant sense of agency in relation to environmental discourses around water, as expressed in dominant interview themes. The table illustrates two distinct positions, but these should be understood as a continuum, and read as mutable rather than fixed.

Notes

[1] A backyarder is defined here as the person who has current control over a backyard. Ninety-one per cent of the total sample were owners, and the remainder commercial renters or Housing Commission tenants.

[2] Socioeconomic status was determined by participant occupation and level of education using Australian Bureau of Statistics categories, and aggregated into five SES groups (upper, upper-middle, middle, lower-middle, low).