

Chapter 8

Property in urban water: Private rights and public governance

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I love a sunburnt country
A land of sweeping plains
Of rugged mountain ranges,
Of droughts and flooding rains.
I love her far horizons
I love her jewel sea
Her beauty and her terror
The wide brown land for me.
...
For flood and fire and famine
She pays us back threefold ...

(Dorothea Mackellar, *My Country*)

How ironic must the words of Dorothea Mackellar now seem in an era of climate change, drought, and increasing pressure on water across all facets of Australian life? To the first stanza of this poem, duly mouthed by the sing-song voices of generations of Australian children, I have added two lesser-known lines from a later stanza. What I would suggest, moreover, is that, in fact, the debt runs the other way — the Australian people have taken threefold and our use of water runs at highly unsustainable levels in both rural and urban areas. The debt will not be paid so much by current water users, but by future generations who will endure either wide-ranging environmental degradation and/or long-term taxpayer-funded repayments. This recognition can be something of a truism allowing a predominately ‘business as usual’ approach to managing and regulating water in urban contexts in Australia, or else it can be the catalyst for a more fundamental rethinking of how water is conceptualised, valued, managed and allocated across the Australian continent. The manner in which water is regulated reflects not only broader social values but also that its governance occurs in relation to the particular legal constructs that define rights and responsibilities for water. Accordingly, property concepts provide a key means for articulating

the choices that arise as Australian society, through its institutional and governance frameworks, responds to the urban 'water crisis'.

Property, though, far from being the settled and determinate concept that people ascribe to the word, remains a contested site for defining 'rights' (Fisher 2007). Crucially also, if we are to begin a more fundamental re-evaluation of how water is integral to living in an increasingly urban society, property must also be regarded as a site for more clearly articulating obligations and responsibilities in respect of long-term sustainability and inter-generational equity. Indeed, whether property, with its lay connotations of privatisation and individual rights, is an appropriate descriptor for defining and managing 'entitlements' to water in an urban context where 'water security' is becoming a pervasive discourse (Marsden Jacob 2006) needs to be closely examined. Thus, this paper explores the multifarious ways in which 'property' and 'rights' in water' might be understood in the urban context. Further, it examines the role that property might play in resolving crucial tensions related to the balance between private forms of ordering relationships to water and the dynamic of the public interest. In particular, it explores how trends to deregulate state-based institutional models of water governance operate in concert with moves to institute 'water-security projects'. In this manner, it examines the ramifications of these emerging governance and institutional forms such as water trade, and market mechanisms for the relationships being articulated between urban and rural areas within Australia. To illustrate this dynamic interplay, the paper examines the development of water infrastructure as an interface between urban and rural areas by reference to the Food Bowl Modernisation Project in Victoria and concurrent metropolitan water-industry reforms. This examination suggests that there is not a neat division between public and private spheres but that property in water is articulated against the complexities of water 'resource development' and water regulation.

Restructuring the public/private spheres of water regulation

'The prolonged process of social and economic restructuring of the relations between the "private sphere" of economic activity and the "public realm" of democracy and the state' (Picciotto 2002: 1) often obscures more fundamental questions about how we might formulate property in water as a concept that straddles both the economic sphere and the public realm in Australian cities. In urban areas, the issues of defining the public interest and state accountability, vis-à-vis the 'rights' of water users and consumers, and the environment, take on particular dimensions in the light of the regulatory changes occurring in the water supply and 'retail' sectors. Moves to deregulate urban water authorities have created models of governance that transcend the simplistic view of dichotomous public and private spheres and public/private property. Some analyses suggest that this ordering, with its terminology of the market, arises

independently of the various forms of state law (Teubner 1983). Here, it is suggested that there exists a symbiotic relationship between state law and the economic regulation and techniques of the market that produces a more seamless, 'regulatory space' inhabited by both 'public' and 'private' 'actors'. Indeed, to posit a dichotomy of public and private regulatory spheres is to ignore the complexities of the interplay between private and public forms of regulation that have merged over the last few decades (see Vincent-Jones 2002: 27; and Godden 2006). On the one hand, there has been a move to allow a greater role for private actors in water-policy development and water-provision services, while concurrently governments have enhanced their auditing and monitoring functions of these private 'players' in the water sphere.

Consistent with such trends, the current emphasis on the articulation of the public/private modes of regulating water resources in Australia is a consequence of the national water law and policy-reform agenda initiated through the Council of Australian Governments' (CoAG) political agreement-based process and National Competition Policy (NCP). To date, these converging policy platforms have culminated in the current strategy known as the National Water Initiative (NWI) and its associated institutional and sectoral forms. Reforms of the water sector have produced a broadly-conceived, structural adjustment where the emerging governance and regulatory models share many common features with trends to privatisation, commercialisation and commodification of water in other social-democratic nation states (Bakker 2005: 544).

In particular, key components for the governance of water are a response to an increasingly prominent series of rules and principles associated with 'economic globalisation' as an ensemble of legal frameworks, policies and institutions for the promotion and protection of private property, investment and trade. Such rules and structures cumulatively attempt to fashion a global vision of economic policy, property rights, and the role of the state and government that institutionalises the political project called 'neoliberalism' (Schneiderman 2000: 84). Under the impetus of this project, an expectation arises that governments will remove regulatory restraints on the movement of capital, property, goods and services. In a corresponding trajectory, governments at all levels are under pressure to divest common resources and publicly-owned enterprises to create private property rights, and to facilitate the private supply of goods and services (Schneiderman 2000: 85). 'Neoliberalisation of nature' (see, for example, Marsden 2003) is a term coined to denote the phenomenon which is characterised by the establishment of private property rights in relation to commonly held natural resources. It is denoted by the use of the market as the mechanism for allocation of rights (or perhaps more accurately, for re-allocation of rights), and the adoption of cost and pricing measures that reflect environmental externalities. These elements are united by an overarching philosophy that environmental components are most efficiently used and allocated when regarded as economic

goods. Markets, rather than being seen as contributing to environmental degradation, are regarded as a large part of the solution.

In this context, '[w]ater has been called the last frontier of privatisation around the world' (Petrova 2006: 1). Yet privatisation of water admits of various gradations which can include situations where:

1. The public entity has ownership of the resource and control over all assets and retains ultimate responsibility but allows some private minor 'service' delivery in a limited sphere such as marketing.
2. The public entity retains ownership but outsources one or more 'core' responsibilities (billing and collection, maintenance, environmental services, training, technology upgrading, procurement management, or other such tasks).
3. The public entity contracts with a private entity to fully operate, maintain, manage its water-supply system, or some significant portion of it.
4. The public entity sells the water-supply system, or a significant portion of it, to private entity (Arnold 2005: 6).

Privatisation of water resources in urban areas, therefore, could adopt any mixture of the models of resource management and outsourcing of services under a general rubric of privatisation. These configurations may or may not affect the fundamental construction of the respective 'property' in water between the state and private individuals. Indeed, Bakker (2005: 543) posits that privatisation and the introduction of markets has not been uniformly applied in converting water into a private 'transferable' commodity. In England and Wales, for example, there has been a resurgence of a mixed private/state-based regulation. Indeed, it is often overlooked that many privatisation objectives are to be achieved by applying a mixture of regulatory policy, legal 'tools' and market mechanisms that either seek to place constraints on the scope of 'state' regulation (exemplified by trends such as 'cutting red tape') or, alternatively, seek to enhance state capacity through increased private provision of services, characteristic of 'Public Private Partnerships'. Again, these regulatory models may impinge on the relative water 'property' distribution between the state and individuals, although complete transfer of public ownership of the water itself, as distinct from infrastructure, into an economic good is unusual within Australia to date (Fisher 2004: 201). Surprisingly, even in the United States, the majority of water resources remain in public control, although various forms of private rights are recognised (Glennon 2005: 10). Nonetheless, the end result in recent times has been to perceive the function of the state in western democracies in an increasingly constrained manner. Accordingly, there has been pressure to progressively narrow the powers of the state with respect to the control and management of water; firstly in response to development-oriented resource-based approaches, and more latterly under globalisation and privatisation trends.

However, as Fisher (2007: 122) notes, current water-reform strategies under the NWI employ a range of legal, regulatory, market and behavioural models to achieve the strategic outcomes, all of which will have differing degrees of legal enforceability. Thus, it is difficult to identify a discrete boundary between the public, the private and respective property 'rights' without reference to specific institutional and governance forms, notwithstanding the claims that are made about the pervasive privatisation of water.

Increasingly, nonetheless, in the utility and resource sectors, there are emerging forms of water regulation typified by groups of public and private actors who are linked through an 'identified' policy problem or objective, such as water security. By virtue of the manner in which the 'problem' is defined, it is seen to necessitate joint participation and a joint expenditure of resources. Typically, such inter-organisational structures are expressed in reinvented forms of agreement, which are then given legal expression in the form of contracts, partnerships or even as joint ventures. Innovative, institutional and legal governance forms have appeared in Australia with blended corporate structures where private law models of the corporation are adapted to public functions in structuring the functions of bodies such as water authorities (for a discussion of these trends within the European Union, see Teubner 1983). As noted, where both approaches converge is around a construct of market environmentalism — 'a mode of resource regulation that promises both economic and environmental ends via market means' (Anderson and Leal 2001).

However, while adopting joint objectives, market environmentalism is not uniform in its distributive consequences. The conjoining of economic-efficiency outcomes with environmental goals under market environmentalism typically occurs at a highly aggregated level, typically expressed as consumer preferences or 'highest and best use', which may ignore local and spatially skewed impacts. Further, the apportioning of risks and returns on joint arrangements and expenditure under the processes of risk-spreading that operates within the financial and security sectors, still suggests uneven responsibilities for the public and private 'actors' in the water sector. These effects can be seen in both environmental impacts and in financial obligations — an important consideration given the large capital costs associated with water-infrastructure development. Any potential distributive inequalities are exacerbated as financial arrangements, despite some attention to triple-bottom-line sustainability objectives, remain more traditionally structured around 'purely' economic objectives. As the head of project finance *nabCapital* commented recently:

[F]rom a banking perspective, there's a tremendous opportunity [in construction of water infrastructure], particularly if it is financed in a PPP-style arrangement. The capital markets, the banking markets and equity markets have a strong appetite for this type of risk. They view

it as essentially government off-take risk, with long stable cash flow.
(See Kellerman 2007: 24)

Whether it is appropriate for governments faced with severe water-supply situations in urban areas, and in the light of long-term drought exacerbated by climate change, to seek to mitigate the risks of water supply by various 'privatisation' or market strategies goes to the heart of debates about efficiency and sustainability of water regulation in urban areas. These trends also have significant implications for rural areas as many of the 'water resources' that governments offer as the basis for water-supply projects will be physically located in rural regions. Most importantly, many of the repercussions of these projects will be experienced in the environment and communities of those rural areas.

Arguably, in the context of recent government policy on water security in urban areas, we need to invert the well-worn adage of Adam Smith in the *Wealth of Nations* to examine not just the invisible hand of the market but the 'invisible' hand of government in the market. Law, whether legislation, or through court-based processes of dispute resolution, is a key mechanism for governments retaining a hand in the market, even if this presence remains largely unacknowledged. Thus, in concert with such a regulatory approach, the role of law is transformed from its traditional command-and-sanction position to be held in tension with other policy drivers such as 'market forces'. Accordingly, within this paper, the theoretical context combines an approach which posits law (and regulation) as an expression of normative 'communications' between social, economic and political groups or networks, and which recognises that law provides only one, albeit a very significant, technique that is deployed either explicitly or implicitly to achieve those normative objectives (for a discussion see Black 2002: 5–6). In a former era we might have referred to the development of 'policy' and then its implementation. Yet law sits awkwardly across such a division. Law is a major influence in the creation of the governing normative order but it is also key to its implementation. Law is central to the institutional design that structures discourse around water (see Dryzek 1997: 109) and also a major instrument to effect the implementation of those normative objectives. If that sense of law is accepted then it is integral to a more complex and reflexive sense of water 'regulation' that has come to the fore within Australia. In turn, this impinges upon how property as a legal construct needs to be understood, both as a normative expression and as a 'tool' of implementation for policy objectives.

Water as the 'property' of the state

In any such examination it is important to acknowledge that even the most expansive models of the commodification of water and risk 'sharing' still assume

a situation of initial state control or ‘ownership’ over water in its various forms. Property constructs are variable and, as Fisher (2004) notes, can range from property held by the state, an individual, a community or an ‘unowned’ commons. Whether the posited ‘unowned commons’ of economic-resource theory can exist in reality is a moot point (for a discussion, see Fisher 2004: 201). Here in Australia, as noted, most debates about the degree and nature of privatisation in relation to water coalesce around the character of ‘public ownership’ rather than querying the initial vesting of the resource in the state. Typically in natural resources contexts, such vesting occurs through statute. In this regard, the Australian High Court has been called upon to determine the nature of Crown [Government] ‘ownership’ of natural resources in the seminal case, *Yanner v Eaton*. In that case, the Court accepted that:

‘Property’ does not refer to a thing; it is a description of a legal relationship with a thing. It refers to a degree of power that is recognised in law as power permissibly exercised over the thing. The concept of ‘property’ may be elusive. ... Much of our false thinking about property stems from the residual perception that ‘property’ is itself a thing or resource rather than a legally endorsed concentration of power over things and resources.’ (*Yanner v Eaton* at paras 17–18 per Gleeson CJ, Gaudron, Kirby and Hayne JJ).

While recognising the integral link between property and its legal designation and enforceability, the High Court clearly distinguished Crown ownership or property in a resource as being distinct from ‘private property’. The Court concluded that the Crown’s property was an atypical form of property, (*Yanner v Eaton* at para. 26 per Gleeson CJ, Gaudron, Kirby and Hayne JJ). Property in the Crown is, in effect, the mechanism by which the state asserts regulatory control over access to the resource. Accordingly, the powers of the Crown must be interpreted in the light of the legislative scheme, which vests that property. While *Yanner v Eaton* was concerned with the ‘vesting’ of wild animals in the control of the State under Queensland statute, the judicial reasoning has particular consequences for current debates surrounding privatisation of water. The conception of property as pertaining to a socially approved ‘power’ over resources, and the distinction between state ‘regulation’ and private rights (otherwise known in formal legal terms as ‘the beneficial interest’), highlights the public-interest dimensions of Crown property or ‘ownership’ of water resources. Thus, this ‘socially endorsed power’ could comprehend a range of public-interest criteria including conceivably ‘a duty’ to ensure minimal rights to water, environmental protection and intergenerational equity (Fisher 2004: 209).

In Victoria, for example, there has been an attempt to clarify the respective interactions of state ‘control’ of the water resource and arrangements with the

private sector through a constitutional entrenchment of the public responsibilities for water (Sections 96, 97 *Constitution Act 1975 Vic*). Such a view of property, state control and private property that emerges from the foregoing analysis represents a more nuanced approach to 'property rights' and the gradations of 'privatisation'. Many analyses of rights in water tend to concentrate upon the imposition of private property rights without proper regard to the wider context in which such rights exist. These analyses typically move to focus upon 'private property', security, trade, transfer and transactional arrangements without duly recognising the relationship of such rights in the context of state 'ownership'; which, in turn, must be conceived more widely than simply as a conduit from the vesting of the water resource to points of allocation to individuals. What then is normative role of the state in articulating property in water? For whom does the state 'act' and in what capacity? Many answers are conceivable: Current urban water consumers? Current business interests? Water users beyond the immediate urban spatial scope? Future generations of water users? The environment?

Consequently, if the state is held to hold an atypical 'common property' in water, it becomes important to explore how water might need to be considered under a broader rubric of state responsibility as part of its 'invisible' hand in the market. Clearly there are public-interest outcomes that markets, when constructed as the aggregation of consumer preferences, simply cannot achieve. Typically, markets do well in allocation and efficiency but less well on issues of broader social and spatial distribution and equity (Bakker 2000; for a contrary view, see Heaney *et al.* 2006). One of the central arguments made for adopting a market-based or property-rights approach to water-resource regulation is that markets allocate scarce resources more efficiently than the public sector. Public-sector limits on scarce resources, such as water restrictions imposed under legislation, it is argued, are inefficient as they impose the same level of restrictions on all water users without regard to the 'value' that users may have for the water. Some arguments are made that these government legislative measures are appropriate only as interim 'emergency' instruments (Quentin and Ward 2007: 8). However, it is suggested that a market-based approach allows those who have a higher-use value for water (and are able to pay to higher prices) to use scarce resources more efficiently. Property rights, it is suggested, provide an incentive to use the water resource more efficiently as other users can be excluded (Posner 1998). While this is an over-simplification of complex arguments, one major assumption not addressed is the assumption of scarcity as a 'natural' phenomenon. By contrast, it is suggested here that scarcity and use value are notoriously relative constructs. Indeed, it might be argued that private property, rather than being the 'solution' to natural scarcity, simply puts in place a private law regime for rationing (that is, state supports private law regulatory forms to ration the resource). Whether the rationing takes place according to a public-law

or private-law regime, necessarily law is involved, rather than the situation being one with a pure market-based 'solution' and the other being a 'state' law-based regime. The articulation of the normative objectives for these legal regimes then becomes critical in any determination of the relative merits of the regimes for ensuring long-term water security and sustainability.

In particular, it is argued that privatisation may produce a 'win-win' between the parties to any water value-exchange transaction but fails to deal with third-party effects, including environmental degradation (Glennon 2005). Moreover, even if we concede that the role of governments should only be to intervene in situations of demonstrated market failure, the range of situations is potentially quite wide. Accordingly, the equation of efficiency in water-resource allocation with Pareto optimality (that is, allocating water to its highest value use) is sufficient to satisfy social-welfare objectives needs further exploration. In this context, the view that water could be conceptualised within a rights-based paradigm may offer a useful counterpoint.

Water as a human right or social need?

At an international level there is an emerging dynamic around the right to water (Hildering 2006). Arguments have been raised that access to a basic water requirement is a fundamental human right and this is implicitly supported by international law, declarations, and State practice (Gleick 1999: 2). Various formulations have been articulated such as that of *WaterAid*, which suggest that: 'The right to water is the entitlement of everyone to have access to sufficient, affordable, accessible and safe water supplies and sanitation services. It places an obligation on states progressively to realise the right to water for all people without discrimination...' (WaterAid 2007). To date, though, there is no clearly agreed upon and enforceable right to water per se.

At its most expansive, the right to water could capture aspects of human rights based around fundamental 'needs' as well as the protection of ecosystems. A rights-based approach could also subsume an ecosystem approach as:

The term 'right to water' does not only refer to the rights of people but also to the needs of the environment with regard to river basins, lakes, etc. Realistically, a right to water cannot be secured without attention to this broader context. A failure to recognise water as an environmental resource may jeopardise the rights-based approach, which views water primarily as a social resource. (Scanlon *et al.* 2004: 22)

Much of the impetus for recognising water as a human right, to ensure a guaranteed level of access to clean, safe water supply, developed from the view that if water is regarded as an economic good then it may lead to a denial of access where some peoples cannot afford the increasing charges associated with full economic recovery of water-provision costs (Bluemel 2004: 1). Further, if

such a right was accepted, then its enforcement would presumably oblige the State (and potentially other parties) to provide water when minimal access is lacking (Miller 2005: 8).

While the momentum generated at an international level to recognise rights to water, either as a stand-alone right or as a complex of human rights and environmental protection, has been significant in shifting attitudinal paradigms about the value of water, the lack of overt enforceability of such 'rights' remains a barrier to practical effectiveness. Explicit constitutional recognition of rights to water, as it occurs in countries such as South Africa, clearly enhances the legal status of such rights and provides a more discrete mechanism for enforcement. Even so, there remain substantial limitations upon directly enforcing any wide-ranging right to water, not least being the high costs of pursuing enforcement through any court or tribunal system. As Fisher (2007: 16) notes, a right or, perhaps at best, an expectation to receive water is conferred mostly in relation to the supply of water for direct consumptive uses in a residential setting in urban areas. Typically, also, any such right is qualified as it will need to be interpreted in the light of corresponding duties cast upon the suppliers of water which are set within a wider legislative and strategic framework that encompasses water policy, strategies, discrete water plans and an integrated array of water rights and obligations. In each instance, the rights and duties are unlikely to be absolute but may be couched as overriding statutory objectives (Fisher 2007: 122). If private entities are held to have such duties in situations where water resources or some essential component of the delivery infrastructure is held privately, the potential for difficulties of implementation of any 'right to water' are exacerbated. Therefore, to date, the main thrust of thinking about the responsibilities that are generated in relation to water has focused on the public dimensions (Fisher 2007).

Clearly also, the formulation of a right to water gains increasing urgency in conditions of scarcity, exacerbated by climate change, where even the most basic access to drinking water may be under threat. However, whether a guarantee to water should be designated as the driver of policies such as 'water security' in Australian urban areas is much more contentious, especially where any rights beyond direct human consumption and basic hygiene are being formulated. In Australia, most basic 'rights' to water are currently articulated in legislation, including the adoption of specific legislative safeguards to ensure access to water for vulnerable domestic water 'consumers'. For example, in Victoria the Essential Services Commission, established under the *Essential Services Act 2001*, regulates water prices. Included in the overarching objectives of the governing legislation is a clause specifying that one goal of the Commission is 'to ensure that users and consumers (including low-income or vulnerable customers) benefit from the gains from competition and efficiency'. With many basic 'rights' to water already largely in place, debates about 'rights to water'

within Australia in future scenarios of water security are more likely to be understood in terms of more discretionary water uses. These might be argued on the basis of social or cultural needs, as exclusions from an increasingly stringent 'user-pays', cost-recovery system of water pricing being introduced through market mechanisms. Typically these needs-based arguments are fairly well accepted in Australia on the basis of consumer- protection or social-welfare outcomes, rather than a more specific human rights categorisation.

The environmental protection component of any putative human right to water is more difficult to prescribe, particularly for urban water. Typically there will be vast distances between the ecosystem and its in-situ functioning and the provision of water to far-off urban water consumers. Arguably the preservation of ecosystem functioning should be a first-order 'right' protected prior to any consumptive use of water. However, despite adoption of sustainability objectives across many areas of water management policy and legislative reform within Australia, environmental water is rarely accorded this priority (Foerster 2007). Typically, under current NWI reforms, environmental water is regarded as requiring the same degree of 'certainty' and legal status as consumptive entitlements; a measure that is welcomed. Yet, in practice, particularly in severely over-allocated river systems, this has still meant that in many instances the provision of water to support ecosystem functioning occurs after allocation to consumptive users as existing entitlements. Environmental water releases, generally rely on highly discretionary decision-making by relevant government ministers with few direct accountability provisions. While market environmentalism would suggest that both efficiency and environmental objectives could be simultaneously achieved, drought and climate change have highlighted the practical impossibility of resolving the competing priorities for water in many catchments across south-eastern Australia. Only if time and spatial scales for calculating efficiency are abstracted and aggregated as a general overall value, apart from the local and contingent uses of water, are such objectives likely to be synchronised. On the other hand, individual efficiency and utility maximisation for water use may be offset against dispersed community amenity loss. (For the contrasting view that there are greater welfare costs associated with water restrictions, see Quentin and Wood 2007.) In other words, local environmental degradation in a given area may be 'offset' against efficiency or security gains across the catchment or indeed across a rural-urban region. Typically the water security 'offset' has been in urban areas.

To date, the competing priorities of consumptive water use and environmental water have been primarily seen as rural issues. Yet if we take a more holistic and spatially extensive view of the ecosystems that 'deliver' water to urban residents, then clearly urban water consumers compete for priority under assignments of water 'rights' that cover a much wider spectrum. If governments increasingly seek to provide water security for urban areas, and if 'barriers to

trade' are to be progressively removed to facilitate rural to urban water trade, then urban water consumers, whose water supplies are insulated in particular ways, may form a significant competitor for rural water. Moreover, whether a rights-based or social-need argument for urban populations might provide a rationalisation for urban water supplies to be guaranteed vis-à-vis environmental functioning or rural uses of water is an issue to be explored further as part of an examination of the temporal and spatial patterns of market environmentalism as it impinges upon current policies for urban water management.

The Australian urban context

The processes of water regulation that have emerged in Australia, while influenced by international trends across the spectrum from market environmentalism to human rights discourses, exhibit some distinctively Australian characteristics. These patterns reflect the historical and contingent importance of water as a 'resource' within Australian society and the economy. In the first phases of the CoAG and NCP national water-reform agenda, urban water issues were clearly eclipsed by concerns over the seemingly intractable decline of rural water resources. Water reforms were first sparked several decades ago by heightened concerns over salinity, together with a growing acceptance of the long-term adjustments occurring across rural industries, which traditionally relied on extensive water use. Severe water shortages over the last few years in traditional urban water supply in south-eastern capital cities and in Perth, have refocused government and community attention on water in, and for, cities. Governments, which in the past had enthusiastically embraced a hydraulic model of water supply (Bakker 2005) largely predicated upon high levels of technological infrastructure development, were seemingly uncomfortable with stringent demand-side measures, such as staged urban water restrictions. While such demand-related measures were instituted (see, for example, D part 3 division 1A *Water Industry Act 1994 Vic*), governments across all states seem to find long-term restrictions on water use for urban communities unpalatable. In a reversion to earlier dependencies on water-resource development models characterised by high levels of technological complexity, many governments have instituted infrastructure-based supply-side 'solutions' under the rubric of ensuring water security for urban areas.

In this context, arguably, what has occurred is that despite a purported reliance on market mechanisms to institute behavioural and structural change in water use, the neo-liberal reform agenda has been amalgamated with earlier models of state-based infrastructure development to form a hybridised model of state control, privatisation and market forces. While the potential for transactional-based market 'efficiency' approaches still exists, many recent policy choices privilege water-supply infrastructure development, albeit in concert with market mechanisms such as water trading. New species of water 'rights'

are being advocated, such as the right of access by prospective businesses to public water-infrastructure development either as ‘third-party rights of access’ to existing infrastructure or through private ‘participation’ in new projects for water-infrastructure development. Such approaches have direct ramifications for the balance between state ‘ownership’ and control, and private ‘property’ in urban water. As Gray and Gardner (this volume, Chapter 7) note in regard to urban sewer mining and wastewater treatment: ‘The recycling of human wastewater is being reinvented as both an environmental and commercial opportunity that can be facilitated by giving “third-party” access to established public-sector infrastructure and — importantly — to the sewage!!’

Third-party access issues and the associated implications for conceiving property in urban wastewater are dealt with extensively in Chapter 7. Therefore this chapter does not canvass those points. Rather, the chapter addresses the manner in which recent policy decisions and emerging legal frameworks for urban water reinscribe but also transform earlier legal patterns of water-supply resource development within Australia. Models of state resource development and access have been modified, but not displaced, by market mechanisms and trends to privatisation. Water regulation exhibits an accretion of various layers of regulation and law rather than a situation where one model of law and regulation is sequentially replaced by another; notwithstanding the extensive law-reform processes that have been initiated in recent decades. To understand this accretion process it is necessary to understand how rural and urban areas were integrated, but separately regulated, under the earlier resource-oriented modes of water law and policy. Arguably, current models of water-resource development founded on technological infrastructure reinstitute interdependency between rural and urban — a factor which remains only partially acknowledged in emerging policy and legal frameworks.

Within Australia, historical patterns of water use, post colonisation, were linked to prevailing land-use settlement patterns. Urban development was strongly influenced by a colonial, and then national, agenda of primary production, and an export economy funnelled through the major port and infrastructure nodes represented now by the major metropolitan capital cities. The patterns of production introduced under the colonial enterprise whereby Australia, together with many other parts of the colonised world, supplied food and fibre to a rapidly industrialising Europe were premised upon the ‘colonial earth’ and its resources largely being treated as ‘free goods’. This was accompanied by economies of scale in the infrastructure development under the increasingly sophisticated regime of land and resource administration and utilisation (Godden 1997).

Integral to such an emerging administration system and resource-exploitation program that produced the ‘classic’ nineteenth-century colonial model of

centre-periphery governance focused upon the colonial capital cities was the necessity to dispense with the riparian doctrine of water rights. Key aspects of the doctrine initially centred upon allowing 'use' of water by upstream users so long as there was not undue interference with the 'economic utilisation of water' by downstream users. At its very basis, it is an appropriation model that adopts a very simplistic instigation of individual rights and associated allocation principles over a common resource.

Within Australia from the late nineteenth century onward, there was a progressive move to replace riparian doctrines with a statutory framework for water regulation, predominately to promote inland settlement based around the implementation of irrigation schemes, largely but not exclusively in the Murray-Darling system (Clark 2003). In urban areas, too, the force and influence of bureaucracies grew and a corresponding statutory and institutional basis for water-supply provision was progressively implemented (Powell 1989; Davison: this volume Chapter 3). Trends to institute statutory forms of water governance and associated public utilities required an articulation of the legal foundation for such governmental control in the statutory vesting of water resources, which occurred in concert with a move from smaller, private sources of water supply.

Urban models of water governance

In turning more directly to the urban sphere, much of the impetus for the developing statutory models of water governance lay in public-health concerns over water supply. Further, as Davison contends in this volume, the identification of cleanliness with 'flushing away' wastes was important for the expansion of extensive sanitary-waste systems that were instigated along British models. In concert with the genesis of much early town planning law, the development of urban water supply and sewerage systems and their associated institutions in Australian cities gave a particular spatial form to these cities. Increasingly water supply was being drawn from 'clean' areas beyond the cities. For example, Melbourne has an extensive area of 'closed catchments' for water supply instigated in the late nineteenth century and early twentieth century that reflected this impetus (Powell 1989). Similarly, wastes from cities were to be carried well beyond what, at the time, were the perimeters of the cities (Davison, Chapter 3). The influence of water utilities in many cities was such that urban form was shaped by the intricacies of the distribution systems of water supply and sanitation infrastructure. Large statutory water authorities became virtually autonomous entities, in many instances having their own unique enabling legislation and institutional regimes. The Melbourne and Metropolitan Board of Works (MMBW), for example, wielded enormous power in political and economic spheres. At one stage it assumed responsibility for the statutory land-use planning process operating within the metropolitan area and set the parameters for the physical and social development of the city well into the late twentieth century

(Powell 1989). The prominence of the water authorities, both urban and rural, reflected the identification of national goals with a virtually unconstrained exploitation of water resources throughout most of the twentieth century. In the post-war period, infrastructure, including water supply and sanitation delivery, came to be regarded as a public good requiring monopoly provision by the state (Connell 2007). Water shaped city form as it still does in a myriad ways in the twenty-first century (Syme, this volume Chapter 6). Most importantly also, it shaped the interaction of capital cities with rural areas by continuing a trend whereby ‘resources’, including water, were drawn from the rural hinterland, and externalities, such as wastes, were visited upon rural areas. However, this neat systemic view represents an oversimplification, as there were many points of resistance to such ‘transfers’ and political compromise and compact reached for exemptions from these dominant trajectories. Yet this underlying pattern of rural–urban interaction has not been directly displaced.

Current urban water reforms

Urban water-law reform, in concert with broader trends, is premised upon a move away from traditional statutory-authority models of water provision and regulation. Primarily, the changes constitute a move from monolithic public-authority models towards the creation of semi-autonomous water ‘production’ and distribution entities and ‘separate’ regulatory institutions. These entities are to function in a market economy; albeit in which the state retains significant control over the functioning of the market. In some instances, the state may constitute itself as an indirect ‘player’ in the market through shareholding in water utilities. Increasingly also, in the urban context, the normative order regulating water increasingly incorporates not only formal laws but a plethora of less-formal standard-setting, behavioural-change models and the development of monitoring and compliance processes, all administered and enforced by a mixture of public authorities, independent agencies such as price regulators, and private ‘consumers.’ (Parker *et al.* 2004: 1). Regulators operate increasingly in a pluralistic setting where certain state functions are shared with, or devolved to, private interests (Keohane *et al.* 1998: 314). Thus, while market-based economic ‘theory’ and its assumption of deregulation have been highly influential as an impetus for recent water-law reform in Australia, regulation of urban water presents a more complex picture. Externally-defined purposes set by agencies such as the National Water Commission (which administers the NWI) are incorporated into the structural shift from predominantly statutory-based water authorities to a situation of water ‘suppliers’, ‘consumers’ and, potentially, an expansive market system of water trading.

Victorian metropolitan water reforms

Victoria provides one such example. That state embarked upon a restructure of the metropolitan water industry in the 1990s that aimed to 'introduce commercial measures [to] improve customer services...' (Office of State Owned Enterprises 1995: 1). The main component of these commercial measures was division of the MMBW, the former all-encompassing metropolitan statutory water authority. The authority was separated into the corporate entity — Melbourne Water (see *Melbourne Water Act* 1992), whose functions largely became the provision of bulk water and wastewater disposal — and three state-owned enterprises that assumed responsibility for the retail supply of water (see *State Owned Enterprises Act* 1992). The state-owned enterprises were established in a corporate form, 'as this best replicates a commercial operating environment.' (Office of State Owned Enterprises 1995: 3). The commercial competition, however, was a 'competition by comparison and benchmarking' as the metropolitan region is divided into geographically discrete areas in which each water enterprise is the sole provider. Each water business functions under a separate operating licence. This is in contrast to the earlier system where all supply and distribution functions were consolidated in a single statutory entity. Water pricing in relation to the water retailers is set by an independent regulator, the Essential Services Commission. Detailed requirements for the economic regulation of the water industry are provided under a Water Regulatory Order. This model for the metropolitan water industry shares similar features with regulatory models adopted pursuant to competition-policy objectives in utility sectors across Australia and overseas.

The Victorian government, in line with water-policy initiatives at a federal level, released a White Paper, *Our Water Our Future*, announcing significant water-law reforms in mid 2004. Amendments to the *Water Act* 1989 (Vic) and the *Water Industry Act* 1994 have progressively introduced a raft of CoAG and NWI reforms which built on the extensive legislative reforms already undertaken in metropolitan water supply. While much of the reform agenda is directed specifically to rural areas (for example, 'unbundling of water entitlements'), there are ramifications for urban areas. In addition, further changes have been introduced into the general regulatory structure with the move to instigate water authorities as corporate entities under the Corporations Law. As of 1 July 2007, all water authorities in Victoria were restructured and are now classified as corporations. This change arises from the *Water (Governance) Act* 2006, which came into operation on 18 October 2006. Of significance is that, as corporate entities under the Corporations Law, there are enhanced reporting and accountability requirements for these entities. Enhanced accountability is required to shareholders — which in this instance is the state government. Exactly how this blend of private corporate responsibilities may sit with public duties of water 'ownership', which to date remain vested in state control, remains to be seen. Such merging of public/private spheres is seen as evolving in the

context of a wider move to open a space between ‘the old dichotomies of state, market, public, private, local, global’ (Considine 2005: 1).

Reform of the Victorian water sector, though, in some respects has not reached the level of privatisation of water and water infrastructure obtained in some other jurisdictions. Further, until recently, it was clear that there were significant political incentives to retain substantial governmental ownership and control of the water-resource sector given constitutional entrenchment of public provision of water services (ss 96, 97 *Constitution Act* 1975 Vic). However, the Victorian Competition and Efficiency Commission, which was established in 2004 with a brief to ‘improve the awareness of, and compliance with, competitive neutrality’, has undertaken an ‘inquiry into the reform of the metropolitan retail water sector’.

The inquiry made recommendations regarding:

- the best structure to allow for the efficient and least-cost provision of Melbourne’s water-supply upgrades, as well as ongoing safe, reliable and sustainable water and sewerage services to Melbourne;
- options to reduce costs of the metropolitan sector whilst maintaining and improving the level of service over time and ensuring it remains innovative and financially viable;
- the broad staging and timing of any proposed structural reforms to the metropolitan water sector; and
- any related improvements to governance and industry structure in the context of the Government’s Water Plan and climate change.

(Victorian Competition and Efficiency Commission 2007: 6)

The context for such an inquiry is ‘The Next Stage of the Government’s Water Plan’ (Department of Sustainability and Environment 2007). A principal component of the plan was the announcement of major water-supply projects for Melbourne. These infrastructure projects include reconnecting the Tarago Reservoir (15GL), the Sugarloaf Interconnector (pipeline) (75GL) and Australia’s largest desalination plant (150GL). The projects are accompanied by large projected increases in average consumer water costs in Melbourne by 2012. Metropolitan water authorities — Melbourne Water, as the wholesale supplier, and three retail water companies, City West Water, South East Water and Yarra Valley Water — have finalised draft water-pricing proposals involving price increases of between 100 per cent and 140 per cent (Victorian Competition and Efficiency Commission 2007: 7).

At first instance, these reforms seem to be concerned principally with efficiency parameters and the operation of market mechanisms, such as water-pricing measures, within the urban water-industry sector. But on closer inspection it is apparent that the issues of water pricing and economic

performance of metropolitan water retailers are being assessed in light of major capital investment, in water infrastructure projects for water supply, located predominately in non-urban locations. Moreover, in light of recommendations to identify objectives such as 'the best structure to allow for the efficient and least-cost provision of Melbourne's water supply upgrades', are these structures to be considered as 'any related improvements to governance and industry structure in the context of the Government's Water Plan and climate change'? If so, at what scale and across which spatial and temporal dimensions will such objectives operate? Are the urban-rural interactions to be considered? The potential scope of any inquiry into metropolitan water governance reinforces the view that urban water regulation cannot be regarded as operating in isolation from surrounding regions. More controversially, perhaps urban water pricing should not be set without regard to the externalities and third-party effects that will occur in those regions, including potential widespread environmental effects. To understand potential ramifications, it is necessary to consider intra-urban water management and then regulation of water at the interface of the urban and rural.

Securing urban water supply

Intra-urban management

As Syme notes in this volume, urban water utilities have been conservative in their reaction to changed demand-and-supply options. The focus is on technological solutions, and the identification of new sources of water supply with well-established approaches to demand management. Some attention is given to water-sensitive urban design and the incorporation of externalities into pricing and cost-benefit analyses, but there are large gaps in achieving sustainable management. While sustainability agendas require more innovative adaptations to changing water availability, to date, the issues of increased scarcity in urban water have been largely managed on an intra-urban basis by regulating through the imposition of water restrictions and efficiency incentives, based largely on pricing measures. Some commentators point to the success of demand-side measures, but clearly the impetus is shifting yet again to give priority to supply-side 'solutions' for Australia's cities. If supply side-options are in the ascendancy, the issues of property, access to water resources and rights to water again become of central importance.

Debates about the utility of property concepts and market mechanisms in achieving the goals of sustainable water use and efficiency have, to date, largely focused upon the rural sector. Yet many of the questions that arise about the balance between private rights and the public interest have similar resonances in an urban setting. Water-scarcity issues have impacted (impact) all our major cities. Typically, while demand-side measures such as water restrictions have

been implemented, and there is much exhortation to change ingrained social practices such as showering, the 'business as usual' scenarios have prevailed. The hope of technological fixes of new dams, desalination plants, water recycling and innovative technologies are being held out as solutions to expand options for metropolitan water supply.

Recycled water, at first instance, appeared to be the panacea to the problem of growing urban water scarcity. While much potential obviously exists in wastewater recovery and treatment, considerable cultural resistance has emerged to recycled water for residential purposes (Hurlimann 2007). Further, water-quality standards require intensive water treatment, which means that in many instances it is not cost-effective. Recycled water systems, where instituted, often have received public subsidy; although one might query whether the full costs of environmental externalities, including energy demands and greenhouse gas emissions, have been costed into other alternatives vis-à-vis recycled-water pricing. Nonetheless, attention is being directed now to supply infrastructure development that can look to 'fresh' sources of water. In concert, there exists the potential to use water 'property' trade/exchange models more directly.

Scarce water supply has been addressed in recent policy paradigms — particularly in the rural sector — by use of allocation mechanisms; that is, to institute entitlement-based regimes and potential re-allocation of water to the so-called highest and best use through the property/contractual/trading process. However, the highest and best use of water, if taken to its 'logical' conclusion can operate across a variety of spatial scales. Rural–urban water exchanges clearly fall within the possible scales.

Rural-to-urban water trade models

On an ad hoc and limited basis, it is clearly possible for urban dwellers to purchase water from outside urban areas. Trade in rural water to supply urban swimming pools (*The Age* October 2007: 1) is just one example. Arguably, such trade meets water-efficiency objectives and it emulates models borrowed from the United States. As Glennon (2005: 1902) notes, '... the best way to reform agricultural water use in the United States is to give farmers a financial incentive to use less: let them sell water to the cities.' Indeed the bulk of water trade in the southwest corner of the US is rural-to-urban water sales. Such potential clearly exists in Australia to facilitate an increased rural-to-urban water trade based on private modes of exchange through contractual and property regimes. Young (2007: 86) argues that even with the projected five million increase in the Australian population over the next 25 years — which will occur mainly in urban areas — any estimated 'transfer' of water from rural to urban areas under such a process will amount to less than 1 per cent of the amount of water that is extracted for use. Such water trade would not be 'unidirectional', with water

flowing to cities and taxpayer and water consumer 'investment' flowing back to regional areas. He cites existing urban subsidy of rural environmental rehabilitation such as the natural heritage trust funds as a model to be emulated. Moreover, Young argues that such rural-urban water transfers under a willing seller/willing buyer formula would provide a net benefit for investment in water even while recognising the need to consider environmental externalities and third-party effects (Young 2007: 90).

However, the costing and assumptions for calculation for such environmental externalities are rarely made explicit (see, for example, the multi-criteria analysis employed to determine options regarding the Goulburn Campaspe Link GHD 2006). Moreover, perhaps the most significant assumption of the calculation is that such benefits would accrue on the basis that all the issues at the heart of the NWI process would be addressed, such as the return of all surface and groundwater in rural areas to a healthy ecosystem state. Clearly to date, there has been significant achievement on the water-use efficiency measures and the instigation of processes to support water trading. By contrast, there has been very limited progress on the actual return of waters to over-allocated rivers and water systems in regional Australia. Even where environmental water has been allocated, there are substantial impediments to its effective implementation to support ecosystem functions (Foerster 2006; Ladson and Finlayson 2002). The view that equivalent 'benefits' could be achieved by using water from rural areas to sustain urban parks on the basis of satisfying consumer preferences for 'greenery' or 'vegetation conservation' or for urban wealth generation and employment gains would suggest a fundamental problem with a market-environmentalist approach. Water, if we accept its fundamental ecosystem qualities, is not an infinitely substitutable and transferable resource. It has localised environmental, equity and distributive-justice implications.

Arguably if we accept the exchange value or 'substitution' involved, the optimal approach might be to dispense with living urban parks and gardens and move to plastic trees. Clearly water, in situ, provides many important social cultural and economic values that cannot be captured by property and exchange constructs as these are currently conceived under market environmentalism. Barriers to trade can alternatively be called legitimate policy and legal constraints in the public interest, which satisfy various public duties entailed in state 'powers over water'. Moreover, arguments that water 'holding' should be free of all restraints and barriers to trade simply does not accord with the substantial constraints and mixed regulatory objectives that operate with land holding as a form of property right. Land holding and water rights have been progressively disaggregated, perhaps most strikingly in urban areas where water is supplied as a 'service'. Yet water remains embedded in its social and physical context and, like land, must fulfil a range of, at times, competing objectives.

Further, arguments have been raised that property regimes should be excluded in situations of risk where there is the possibility of irreversible harm. Arguably, under the impact of climate change, many aquatic ecological systems and other water-sensitive biodiversity will approach the point of irreversible harm quite quickly, especially if water is drawn from already stressed rural areas to urban areas in order to secure water supply. Risk-spreading operates in a highly skewed manner, with public 'actors', like the environment, bearing inordinate proportions of the risk of climate change, which ultimately will become an intergenerational debt. Similarly, attention needs to be directed to the social and cultural impacts of rural–urban water 'transfers' beyond the efficiency incentives that potential sales of rural water to urban areas may comprehend. For example, one scenario to analyse the efficiency of urban–rural water trading states: '[T]he technical feasibility and environmental implications of connecting each of the above cities with their region and with neighbouring regions is not assessed' (Young, Proctor and Qureshi 2006: viii). Such exclusions from assessments of shadow pricing for urban water would seem to leave out major cultural costs and externalities that may be integral to determining the long-term value of water.

Institutional forms of rural-to-urban water exchange

To date, any major scheme to institute rural-to-urban water trade remains small scale and within the scope of significant controls on movement of water out of rural catchments. Indeed, in Victoria there remain limitations on the extent of water 'property' that can be held independently of land holding, despite moves to separate land and water entitlements and to 'unbundle' water holding into water shares, water-use licences and delivery charges. The issues of speculative accumulation of water rights in any development of secondary markets in water, together with potential for monopoly controls and price setting, are recognised as legitimate reasons to provide limitations on freestanding water 'rights'. Clearly the hand of government regulation is in the market to achieve particular public-policy outcomes.

Significantly, therefore, it appears that the trends to institute market environmentalism sit alongside much more mixed regulatory objectives. What appears to be occurring in the water-security context is an amalgamation of the resource development/infrastructure mode of water regulation, with 'public', rather than market, mechanisms of exchange. To date, the exchange is not the typical inter-party private mode of commercial water trade but one instituted by the public sector, albeit with considerable private participation in infrastructure development. Under the rubric of securing water supply for urban areas, governments again have adopted a classic resource model whereby regional resources are drawn to the centre from the periphery. This mode is evident in the latest stages of the Victorian Government Water Plan with its focus on three

major infrastructure developments, all dependent upon drawing water resources from regional areas. The food-bowl modernisation project and the associated 'pipeline' exemplify this process.

Food Bowl Modernisation Project

The Food Bowl Modernisation Project (FBMP) forms part of a number of major infrastructure-development projects intended to augment water supply for Melbourne and other regional centres. The FBMP is intended to provide up to 450 billion litres of water at a cost of \$2 billion. The first stage will cost \$1 billion and projected water savings of up to 225 billion litres are to be shared between Melbourne, irrigators and the environment.

The focus of this project is a substantial upgrade and redevelopment of irrigation distribution systems in the Goulburn Valley. This will include channel automation, piping, channel linking and metering of the Goulburn Murray irrigation systems. The second major component of the project is the construction of a pipeline that will allow delivery of Melbourne's share of the water savings to be brought to the city. The State Government will provide \$600 million towards the project. Two water authorities, Melbourne Water and Goulburn-Murray Water, will provide \$300 million and \$100 million, respectively. These funding arrangements for the project reflect both the public interest in improvement of outdated and inefficient water-delivery systems (efficiency improvements from 70–85 per cent are projected to be achieved) and the perceived need to augment Melbourne's water supply. Indeed, to that end, it is proposed that Melbourne will receive its 75 billion litre share of water savings in 2010, ahead of the both irrigators and the environment.

This proposal is controversial on a number of fronts. Farmers in the region are opposed in principle to the movement of the region's water to the city. In addition, if savings are not fully achieved by 2010 the Melbourne allocation will be supplemented with water that is dedicated for environmental (water-quality) purposes on the Goulburn and Broken Rivers. Assessments of regional social, economic and environmental impacts of this water-sharing arrangement have not been conducted. The Steering Committee has recommended in its Draft Report that despite the proposed pipeline bringing water to Melbourne, trade of water between farmers and city-dwellers will not be permitted. The rationale for this recommendation is not explained in the Draft Report.

The FBMP is largely focused on water-services infrastructure, although it is noted that the project will have significant economic (and therefore social) benefits in the region. For example, the Draft Report describes in considerable detail the various components of what the modernised water-delivery system will consist of, including interconnectivity, automated supply backbone, various connections to the supply backbone for different customers and customer

irrigation systems. There are only brief references to any social benefits arising from having an efficient irrigation system and no references at all to how the modernised system might also facilitate delivery of environmental water to stressed rivers and degraded wetlands.

On paper, the water-sharing arrangements (75 billion litres each for irrigators, Melbourne and the environment) appear equitable and a reasonable justification of such significant public investment. Further, the annual allocation of these savings is to be equally divided between these user groups. Thus, if water availability is diminished by reduced inflows, the allocation will be adjusted appropriately and then distributed equally. However, the question of whether or not the environment will indeed receive its share remains. First, although there is a commitment that environmental water will have the same status as water available to Melbourne and to irrigators, the Minister still retains discretion over the allocation of this water.

Concerns remain therefore about the final outcomes for the environment and for rural communities of any movement of water out of the region. Whether it is sufficient to 'offset' such water by money flowing into the region through upgrading of irrigation infrastructure and some potential for provision of environmental water to stressed rivers returns us to the opening questions posed in this paper about the commodification and exchange value of water. Further, if the pipeline infrastructure is in place, will pressure mount for lessening the 'barriers to trade' to urban areas to permit private trading regimes? Potential price differentials for rural, as opposed to urban, water are a likely catalyst — especially with projected large price increases in metropolitan water in Melbourne that may emerge from any 'reform' of the metropolitan retail-water sector. These factors would seem to add to general privatisation pressures to create a regime of private property in water that does not distinguish rural from urban areas. If such a scheme was instituted, then the localised effects of 'risk-spreading' under any such potential regime is more problematic without firm and transparent legal safeguards for its operation to minimise its distributive-justice impacts. Alternatively, if we use a human-rights formula it may also raise dilemmas. Few would argue against the provision of basic water rights to urban dwellers in terms of drinking supply and basic hygiene on a basis guaranteed at law. Yet do urban dwellers have a right to 'social needs' water ahead of rural dwellers or the environment on the basis of efficient and highest-value use? Resolution of these complex questions will require rethinking how water is conceptualised, valued, managed and allocated within the Australian continent, including the respective processes of interaction between urban and rural areas.

Conclusion

The food-bowl modernisation example indicates that the process of legal and regulatory change in water resources is more diffuse than a simple imposition

of 'market systems' to displace the existing elements of the state-based 'resource development' model (Bakker 2005: 546). Urban water-law reform in Australia is a regulatory sphere where many elements of state-based property, private property and market-efficiency models coexist. Further, the concepts, assumptions and terminology of resource economics and competition theory have been mediated through malleable definitions of the 'public interest' and competing definitions of water 'property' rights. Clearly, as the Victorian situation illustrates, these remain open-ended and responsive to further redefinition as the implementation of water-law reform proceeds. In the context of increased pressure for governments to respond to pressures of climate change and water security, it is critical that there be enhanced avenues for informed third-party comment and greater social debate about these questions of the public interest in water-resource development. Social science perspectives provide one such means of capturing a broader understanding of the social and cultural values of water that often seem to be either excluded or 'discounted' in the prevailing modes of analysis that inform urban water-supply planning and management. Law, as part of that wider perspective, can play a crucial role in shaping and implementing these normative perspectives.

In turn, adoption of such normative objectives will require associated statutory, institutional and regulatory adjustments, some of which may well entail potential readjustments of underpinning property constructs. The ongoing redefinition of what constitutes property in water as a state-based or private-law entity is inherent to reshaping the purposes of water regulation, the forms of governance and techniques of implementation within an overarching narrative of a move toward greater market ordering. Again there is a need for enhanced transparency about the assumptions upon which such decision-making proceeds rather than an implicit 'trust' in technological and market-based approaches. Indeed, policy solutions that are being proposed to remedy the water-security problem in urban areas are functionally constructed in prevailing analyses as market responses. Yet these 'market responses' still require explicit deployment of public supply-side 'technological' solutions (and legal and institutional support) to institute those efficiencies. Amalgamation of technological supply-side solutions with allocation/entitlement-oriented regimes is seductive. These approaches suggest the input of the public interest via consumer preference and individual-use values, while masking the extent to which demand-side options are displaced by supply-side security 'solutions'.

In conclusion, even if urban water governance is to be progressively moved within a private-property, market-based model, the hand of government in the market — provided it is much more transparent and not invisible — may well be appropriate to provide a counterpoint to the narrowness of private transactional formulations of property and efficiency that ignore third-party effects and environmental and social externalities. Third-party effects may be

felt more acutely in non-urban contexts, even though the focus may be urban water provision. As Arnold (2005: 4) notes: '[J]ust because property is private, rather than public, does not mean that it is not subject to public controls and interest.' Alternatively, though, hybrid models of public/private regulation also need to transcend the accretion of earlier state-based technology-driven approaches in favour of more fine-grained regulatory forms that can include more complex understanding of the value of water in a long-term intergenerational sense, as well as appropriate and effective costing of externalities to address long-term water and environmental security.

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