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# Archipelagos and networks: urbanization and water privatization in the South

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This paper examines the interrelationship between urbanization and water supply privatization in cities in the global South. The purpose of the paper is not to evaluate the impacts of privatization; rather, the paper analyses the differences in pathways and modes of water supply privatization, focusing on urban and contrasting with rural areas. A distinction is drawn between privatization (organizational change) and commercialization (institutional change) of water supply. Emphasis is placed upon the interrelationship between regulatory change (a shift from public to private management of water supply systems), human use of and access to water, and urban waterscapes. In contrast to metaphors of 'networks' so often applied in analyses of water management, the 'archipelago' is posited as a metaphor which better captures the complex overlapping strategies of water supply provision in urban areas in the South. Building on this metaphor, and in response to the 'public-private' dualism often invoked in studies of privatization, the paper outlines an alternative typology of water management in urban areas in the South. This typology foregrounds the concepts of the territorialization of corporate power as a means of understanding the articulation between privatization and urbanization processes in the South.

KEY WORDS: South, urbanization, privatization, political economy, water supply

## **Introduction: privatization, commercialization, and water supply**

Private sector management of water supply systems is not a new phenomenon. The diversity of water supply management systems worldwide – which operate along a continuum between fully public and fully private – bear witness to repeated shifts back and forth between private and public ownership and management of water systems<sup>1</sup>. In Buenos Aires, a private water company was the first to supply citizens with networked water supply. In many cities in France, private companies manage municipally owned water supply infrastructure via long-term management contracts (Goubert 1986). The first companies to supply London with water were privately owned; after a period of state (municipal and then national) ownership in the twentieth century, the English water supply utilities were privatized by asset sale in 1989 (Bakker forthcoming; Hassan

1998). In most cities of the global South, private water vendors – delivering water to households by jerrycan or tanker – have long been the means by which the poor obtain water, usually at a cost per unit volume several multiples of that delivered via public water supply systems to the middle and upper classes.

Despite this history of experience with private sector management of water supply, the twentieth century witnessed an increase in state dominance (both local and supra-local) of this sector. A combination of socio-economic, political and cultural factors underlies the growing dominance of the state in water supply provision in industrialized countries in the twentieth century. Water is expensive to transport relative to value per unit volume, requiring large-scale capital investments in infrastructure networks which act as an effective barrier to market entry. Water supply is thus highly susceptible to monopolistic control (a condition termed 'natural monopoly' by economists). Commercializing

water utilities is as a consequence invariably fraught with difficulty, to a much greater extent than for other network utility services such as telecommunications, gas, and electricity.

In addition to water's 'natural monopoly' characteristics, the symbolic and cultural importance of water as a (partially) non-substitutable resource essential for life, its strategic political and territorial importance, the intense conflicts that arise over the shared use of a flow resource required to fulfil multiple functions (agricultural, industrial, drinking water, environmental), and the need in industrialized, urbanized societies to mobilize large volumes – invariably at a high cost relative to the economic value generated – have been used, particularly in the twentieth century, to justify public sector involvement. Moreover, the health and hygiene effects of lack of access to water, together with the tendency of private companies to fail to extend coverage to the poor (both as a result of the tendency to cherry-pick profitable neighbourhoods and classes of consumers, and the high prices and poor services resulting in a situation of natural monopoly), were two of the most important justifications for bringing water supply under the control of the state, whether through strict regulation or public ownership of water supply infrastructure, during the twentieth century. Thus, throughout most of the past century, water management, particularly but not exclusively in OECD countries, was characterized by the dominant role of the state as owner, manager, and regulator of water supply infrastructure.

Despite the apparent consolidation of state control over water supply management, the effectiveness and legitimacy of publicly owned water supply systems has been challenged over the past two decades. At the same time, the state has increasingly relinquished management and/or ownership to private capital and ceded regulatory control to markets and market-mimicking regulatory mechanisms through a combination of deregulation and re-regulation. Argentina, Bolivia, China, Chile, England, Indonesia, Morocco, the Philippines, Poland, South Africa, Spain, Thailand, and Turkey are just a few of the countries in which the state has initiated private sector participation in water supply<sup>2</sup>. The rapid increase in private sector participation has taken a variety of forms: the opening of the water supply industry to the private sector in the majority of EU countries (Petrella 2001); private–public partnerships in the South (Silva *et al.* 1998); the creation of water banks and markets (Bauer 1998; Giansante *et al.* 2000); and the massive international growth of the bottled water market. At the beginning of the 1980s, the private management of water supply was an excep-

**Table 1** Water and sewerage projects with private participation in developing countries (1987–2000)

Year	Number of projects reaching financial closure	Cumulative number of projects
1987	2	2
1988	0	2
1989	3	5
1990	0	5
1991	2	7
1992	6	13
1993	9	22
1994	15	37
1995	20	57
1996	18	75
1997	30	105
1998	19	124
1999	34	158
2000	25	183

Source: World Bank PPI database (2001).

tion rather than the rule. Two decades later, the water supply systems of over one hundred cities in developing countries are now managed by one of a handful of private multinational companies eagerly pursuing growth in a multibillion-dollar global market (Table 1). The projects summarized in Table 1 include both water resources and water supply. Private companies may be involved in either the construction of large-scale infrastructure developments, such as reservoirs or canals, to supply raw water, or in management, rehabilitation and extension of 'clean' (i.e. potable water) and dirty (i.e. wastewater) networks. The majority of projects undertaken to date involve both 'operation and maintenance' of the infrastructure, together with the construction and/or rehabilitation of infrastructure. In the case of water supply, private sector participation may take a variety of forms (Table 2).

To date, the majority of contracts have been granted on a 'concession' basis, in which a private company obtains the exclusive right to operate the water supply infrastructure for an extended period of time (usually 20–30 years). The vast majority of contracts have been granted in urban areas; given economies of scale associated with concession contracts, rural areas, or even conurbations with a population less than 500 000, are unlikely to attract the interest of the formal private sector.

The majority of these large projects have been undertaken by a very small number of companies. Local private companies tend to partner with the sector leaders – ONDEO/Suez Lyonnaise des Eaux and Vivendi/Générale des Eaux (both French) – both

**Table 2** Private sector participation in water supply – contracts

Allocated responsibility	Contract type					
	Service contract	Management contract	Lease	BOO, BOT*	Concession	Divestiture
Asset ownership	Public	Public	Public	Public and private	Public	Private or public and private
Capital investment	Public	Public	Public	Private	Private	Private
Commercial risk	Public	Public	Shared	Private	Private	Private
Operations and maintenance	Public and private	Private	Private	Private	Private	Private
Tariff collection	Public	Public/private	Private	Public	Private	Private
Duration	1–2 years	3–5 years	8–15 years	20–30 years	25–30 years	Indefinite (may be limited by license)
Examples	Mexico City	Gaza City	Guinea	Sydney	Buenos Aires	London

\*BOO stands for 'build own and operate' and BOT for 'build operate (or own) and transfer'

Fortune 100 companies; on most measures, these two companies control approximately 70% of the market. This concentration is due in part to the absence of private sector local competitors, and in part to the competitive advantage held by these multinational firms, collectively serving hundreds of millions of customers on all five continents. Another advantage has been the fact that private companies receive support from key mediators of international finance – the International Finance Corporation, the World Bank, the African, Asian and American Development Banks – and key sources of bilateral aid, such as Britain's Department for International Development.

Given the limited number of competitors, markets must be stimulated and simulated through making 'conditions as favourable as possible for the [companies] to compete [and through] finding ways of increasing the number of interested companies, both internationally and locally' (World Bank/IFC 1991, 5). Markets must also be created and fostered through the promotion of private sector involvement (e.g. through 'seed' loans and grants for technical assistance in preparing and implementing concessions and leases), and the use of guarantees to promote private sector involvement (World Bank 1997b, 46). More subtly, the World Bank realizes it plays a key role in creating investor confidence:

an institution which 'brings confidence', such as the Bank, might have influence on the psychological factors which may be much more important than money

brought to the table... [World Bank investment] is critical in the private sector feeling secure.

World Bank/IFC 1991, 4

The facilitation role played by both international financial institutions (IFIs) and national governments is a critical and necessary condition for the existence and functioning of the world water market. In the Far East, where 'water privatisation has been promoted by IMF pressure' (British Water 1998, 3), agencies such as the IMF encourage receptiveness for private involvement in the water sector in 'client' countries, facilitate contacts between 'developed' world water companies and overseas governments, and provide financial assistance and guarantees for water privatization projects. The role of these international facilitators is crucial. For example, bilateral aid agencies such as Britain's Department for International Development provide technical assistance for countries considering privatization. In some developing countries, IMF conditionality requiring privatization and/or commercialization of the water supply sector has been imposed<sup>3</sup>.

The current era of water privatization can be distinguished from previous eras by four characteristics. First, the scale of involvement of multi-utility, multinational companies is unprecedented. The two largest companies, ONDEO/Suez Lyonnaise des Eaux and Vivendi/Générale des Eaux (both French), are among the largest 100 companies in the world, and dwarf their few credible competitors. Second, the amounts of finance being

mobilized, via these private companies as well as multilateral lending and bilateral aid agencies, are large and growing, particularly in response to rapid urbanization and a consequent reduction of access to sufficient supplies of potable water for millions of city dwellers worldwide. The availability of finance must be understood within the context of increasing flows of foreign direct investment to the South, beginning in the late 1980s. Infrastructure investments by the International Finance Corporation (a World Bank affiliate that lends only to private entities), for example, surged 'from modest amounts in the late 1980s to \$330 million in the fiscal year 1993 leveraged more than ten times so that, in 1993, the IFC participated in private [infrastructure] investments of \$3.5 billion' (World Bank 1994, 92). Third, as discussed above, private companies are receiving both ideological and financial support from key mediators of international finance. Fourth, water privatization is occurring as part of a debate over the sphere of legitimacy of the state, and a much broader process of delegation of formerly core state functions to non-state actors, in the context of high levels of state indebtedness.

It is within this context that utility services such as telecommunications, electricity, and gas, and infrastructure such as roads and housing have been increasingly privatized and commercialized over the past two decades. Privatization refers to the shift in ownership from the public to the private sector. Private sector participation entails the participation of private companies and private capital, through a variety of contractual arrangements to build and manage infrastructure on behalf of the public sector. Commercialization refers to a reworking of the management institutions (rules, norms, and customs), and entails the introduction of markets as allocation mechanisms, market-simulating decisionmaking techniques, and the displacement of Keynesian-welfarist by neo-liberal principles in policymaking. A key element of commercialization of services is liberalization: selective de-regulation and re-regulation designed to allow and indeed encourage competition in the product market. Direct competition in the water market is in most cases unfeasible, yet various forms of competition, for rather than in the market, and of simulated competition have been introduced (Cowan 1997; Sawkins 1995).

Privatization and commercialization are not necessarily concomitant. Some publicly owned water companies (e.g. Amsterdam's) are run along fully commercialized lines. The converse can also be found, most frequently in the case of public-private partnerships in developing countries which make concessions in the form of direct or cross

subsidy to poorer consumers. Privatization can occur without liberalization; the divestiture of the public water companies in England and Wales in 1989, for example, preserved their vertically integrated, monopoly structure. Competition for the market may occur without private ownership of infrastructure; in France, municipalities own water supply infrastructure, and may choose to tender water services out to private companies who compete for long-term contracts. Privatization and commercialization may thus be distinct modes of transformation of water services management.

In practice, however, private sector participation and/or privatization of water supply often imply commercialization. For the proponents of privatization this is of clear benefit; water must be treated as an economic good – as specified, for example, in the Dublin Principles<sup>4</sup> and in the Hague Declaration<sup>5</sup> – if it is to be managed efficiently and if greater numbers of people are to be provided with access to safe, sufficient water supplies. Countering the claim that water is an economic good (and a human need), the Water Supply and Sanitation Collaborative Council's 'Vision 21'<sup>6</sup>, the Cochabamba Declaration<sup>7</sup>, the Group of Lisbon's Water Manifesto<sup>8</sup>, and the UN Committee on Economic, Social and Cultural Rights' statement<sup>9</sup> on the right to water have argued that water is a human right under international law.

The question of whether water supply is a human right or a human need bears directly on the water privatization debate. In the mid-twentieth century, international debates stressed the importance of water for health and sanitation in basic need requirements. In recent decades, the argument for treating water as a human right has been advanced, drawing on the Universal Declaration of Human Rights (1948), the Covenant on Economic, Social and Cultural Rights (1976), and as made explicit in the Convention on the Rights of the Child (1986). Water as a human right would be enshrined in legislation (as in South Africa's constitution<sup>10</sup>) placing a duty on governments to ensure the fulfilment of this right. If water were a human need, however, governments would have no such duty. In practical terms, a human right to water would imply a basic volumetric allocation per person per day; 'sufficient for everyone's need, but not for everyone's greed'. The difficulties of implementing such a right are well understood in South Africa, where many citizens have been promised, but not yet provided with, the minimum level of 50–60 litres per person per day established by the government as 'sufficient' in its post-apartheid Reconstruction and Development Plan (Bond 1998).

### Water and sanitation in urbanizing areas

We are in an era of gigantism, where nation-wide economic survival depends on gigantic organisations for mass production. We no longer irrigate our own small-holdings and water our cattle from the village pump; we mass together for work, we mass-produce in mammoth factories . . . and therefore, we must mass produce our water.

Twort 1963, 9

#### *Urbanization and the industrialization of water supply production*

Water lubricates capital circulation, a necessary, and yet often invisible precondition to life in modern, industrialized societies (Swyngedouw 1997). The emergence of an industry dedicated to the mass production of water, and the concurrent conversion of water from an artisanal to an industrial product, tends to occur in urban areas during periods of rapid urbanization. In rapidly urbanizing areas, the limited availability of clean water supplies leads to widespread concerns over water quality and access, as artisanal water sources – wells, rivers, ponds, streams – become increasingly polluted (Lindh and Gilbrich 1996). To meet growing demand, water production becomes gradually industrialized, with artisanal methods of collecting and distributing water (such as water vendors moving on foot through city streets) being replaced by networks of pipes leading from reservoirs to consumers' taps, achieving economies of scale and scope, and enabling higher consumption levels. Surface watercourses – which typically support a multiplicity of uses including transport, trade, drinking water, and effluent disposal – are filled in, or covered over. The water network is, in part, an artefact of urbanization.

#### *The urban services challenge*

There are numerous difficulties posed by the provision of services such as water and sewerage in rapidly expanding and unplanned urban zones. Technical difficulties may be posed both by a rapid increase in demand (volume of water and wastewater), as well as the distribution of demand. Water and sewerage infrastructure networks are highly capital-extensive, with relatively long lives. They are also sunk networks – often physically buried below city streets and, in many cases, below layers of other infrastructure networks. Built to peak load specifications that may have become quickly outdated, water and sewerage networks are highly inflexible – very expensive and unwieldy to update.

Expanding the network poses distinct technical difficulties, depending on the spatial distribution, physical layout, and concentration of housing. In most cities, a networked water supply system exists but covers only a proportion of the city, usually part or all of the most affluent neighbourhoods. Expansion usually implies extension of services to newer, often informal settlements in urban areas. This requires an enlargement of existing and building of new trunk mains, water treatment and wastewater treatment plants. In many cases, new water sources such as reservoirs – expensive and time-consuming to develop – are also required.

A second set of difficulties relate to institutional factors. In a weak institutional setting, for example in the absence of secure land tenure, it may be difficult to obtain the necessary permits to build infrastructure. Poor quality information – cadastral surveys in newer, and particularly informal settlements are often lacking – confounds the creation of a potential customer base and renders cost recovery more difficult. Communities often have strong internal organizational structures, but these groups may not have formal status and may not be recognized by the water company or the municipality as legitimate interlocutors.

In addition to technical difficulties and institutional weaknesses, a logic of rent-seeking and patronage on the part of urban elites often underlies the failure to expand urban services. Governments may be unwilling to extend services to informal settlements due to their unwillingness to support or encourage additional rural–urban migration. The existing public water supply network is frequently badly managed; sufficient water resources may exist, but leakage and high rates of unaccounted for water may significantly reduce the availability of water supply. In many cases, the public water supply network operates in a vicious cycle of the '3 lows': low investment, low service standards, low cost recovery. In some cases, corruption and the misuse of the water supply business for political ends occurs; water services are particularly open to such behaviour as public water companies are one of the few revenue-generating utility services controlled at the municipal level. As such, they are frequently employed to subsidize other municipal services and activities, without applying the surplus (if any) to network maintenance and expansion. Rent-seeking and patronage aside, the multiple demands on water supply utilities in urban areas – where industrial and institutional sectors account for the majority of water use, and are well placed to advance their claims for services – also contribute to the relative neglect of some residential neighbourhoods.

This behaviour must be understood in the context of 'urban primacy', the pattern of dominance of one (or, at most, a handful of) urban area(s) within many, if not most, 'developing' countries. As Gilbert and Gugler note, in many third world countries, 'most large-scale modern activities, most forms of social infrastructure, and most centres of decision making are found in a single major city' (1992, 36). Unlike the feudal order of Europe's Middle Ages or the 'hacienda' system in the colonial and early post-colonial period in Latin America, throughout the South today virtually the entire elite is located in cities (Gugler 1997). The social surplus that would have been controlled by private interests under laissez-faire capitalism, or by colonial powers during the age of empire, is now controlled by the state, which reallocates resources with three goals: improving the immediate environment (of decisionmakers); 'assuring the continued collaboration of the middle class'; and 'placating strategically placed elements of labour . . . with the result that public resources are disproportionately spent on the privileged consumption of the few, and conspicuous investment for the few – in cities' (Gugler 1997, 120). Within this hierarchical, differentiated socio-political model, individuals do not have equal entitlements to state services by virtue of citizenship. Not all citizens, in other words, are considered to be political constituents of society. Rather, urban elites – with entitlements to local state services such as piped water supply – constitute the privileged constituency of the local state. Indeed, urban elites are often state elites, staffing state institutions and constituting a core base of political support for governments.

#### *Water and sanitation services in urbanizing areas of the South*

For the urban elite, water supply is often relatively abundant, and relatively cheap. For the urban poor, the scarcity of potable water is a daily hardship. Wealthy, mostly white South Africans, for example, use on average 600 litres per person per day of potable water delivered through taps inside the home, whereas the poor and largely black residents of peri-urban settlements may average 10 litres per person per day (Van der Merwe 1995), often walking several kilometres to fetch water. This highly unequal distribution of water is in this case the legacy of apartheid, which entrenched differential access to water resources and domestic water supply networks (Bakker and Hemson 2000), but is by no means unique. The pattern of elite access to piped water supply, and reliance of the poor on the informal water sector (water vendors) or unimproved water sources is repeated through-

out the developing world (see, for example, Lovei and Whittington 1993).

It is in the context of inequitable access to water supply that calls for improving water and sanitation services must be viewed, particularly in the context of rapid urbanization in the 'global South' (see, for example, Kjellén and McGranahan 1997). Annual investment in urban water supply in Africa, Asia and Latin America and the Caribbean over the decade 1990–2000 was just under US\$8 billion (half funded by external support); annual investment in rural water supply was significantly smaller, at just over US\$4.5 billion (with external support funding just under half) (WHO 2000). In the context of government investment, these figures are significant: the medium total investment in water supply and sanitation as a percentage of overall government investment during the same period was 5.3% in Africa, 3.6% in Asia, and 8.3% in Latin America and the Caribbean.

The imperative to change this pattern of unequal distribution of potable water has lain at the heart of calls for increased expenditure on water supply and sewerage services since the International Water and Supply Sanitation Decade in the 1980s (WHO 1990). Water supply and sanitation expenditures, as a proportion of total aid (or 'cooperation') budgets in OECD countries, have increased steadily since the 1980s to 6.6% in 1996 (WHO 2000). However, in the decade from 1995 to 2005 the World Bank estimates that US\$60 billion per year must be invested in the sector to ward off a situation of 'water stress'<sup>11</sup> (Haarmeyer and Mody 1997):

Current trends show that several regions, most notably the Middle East and North Africa, and an increasingly large number of countries in all parts of the world are approaching a 'water crisis'.

World Bank 1997b, 47

The increase in 'water stress' or 'water scarcity' as measured by indicators linked to unit volume available per consumption masks a more profound, widespread, and longstanding experience of water scarcity in cities. On a global scale, consumption of water by domestic users is only 4% of total water consumption. Yet twenty-first century urban dwellers consume large quantities of water; each inhabitant of London uses perhaps 160 litres per person per day, and the inhabitants of Los Angeles closer to four times that amount. In industrialized countries, demand per capita has increased steadily throughout the twentieth century. Whereas wealthy residents of desert states such as Nevada consume on average over 950 litres per person per day (Solley *et al.* 1998), the World Health Organization

estimates that 1.1 billion people worldwide do not have access to safe drinking water, and 2.4 billion are without access to adequate sanitation (WHO 2000).

Investment in urban areas is directed in part to meet the water supply and sanitation needs of rapidly increasing urban populations. Cities globally have experienced since 1950 what Harvey terms 'hyber-urbanization', with 'the pace of urbanisation accelerating to create a major ecological, political, economic and social revolution in the spatial organisation of the world's population' (1995, 10). Between 1950 and 1985 the proportion of the world's population living in urban areas doubled. By 1985, in the more affluent countries in the Third World urbanites had become a majority.

As cities have grown, urban services have not kept pace. The number of people without access to sanitation in urban areas was estimated to have increased by 10 million in the 1980s (Haarmayer and Mody 1998). If the rate of urbanization does not decrease significantly, this number is predicted to grow (Haarmayer and Mody 1998). The World Bank estimates (lower than those of the WHO) that 1 billion people have no access to safe drinking water, and 1.7 billion are without access to adequate sanitation (World Bank 1997b). An increasing proportion of those lacking potable water live in urban areas. In most developing countries, access is highly correlated with income.

Even those with access to networked services may have problems with low quality and reliability. In many networked water supply systems, water may flow intermittently – a few hours per day, or only a few hours per week. Water pressure may be low, further reducing access. In some households, a water tap is left constantly open – when the arrival of water announces itself in a sudden gush from the tap, users rush to fill buckets and other vessels with water. In part because of problems associated with infiltration in pipes in which supply is intermittent rather than constant, water is frequently not potable, and may be of insufficient quality for other household uses, such as cooking. As a result, most households rely on a mix of water supply strategies: for the wealthy, a tank on the roof connected to both a private deep well and the network, supplemented by bottled water for drinking; for the less affluent, a hand-dug shallow well for bathing and cleaning, often in conjunction with a supply of drinking water purchased from neighbourhood water vendors.

### **Privatization and commercialization of water supply management in the South**

Over much of the twentieth century, the conven-

tional response to the problem of providing access to water supply was an argument in favour of increased state spending. In addition to the multiple market failures<sup>12</sup> characterizing its supply, the uniqueness of water – as a partially non-substitutable resource essential for life and critical to public health – was a strong justification for managing its supply as a service, which should be available on a subsidized basis to citizens. Water supply was perhaps the most basic of entitlements, and running water inside the home considered to be a powerful material emblem of citizenship. More pragmatically, given the high degree of public health externalities, water supply was reconceived as a 'merit good'<sup>13</sup> – necessary for both production and reproduction. After a period of experimentation in the nineteenth century in many countries with private sector provision of water supply, the local state increasingly dominated water supply, and any remaining private activity was, in most cases, strictly regulated.

In contrast, arguments in favour of increased private sector participation attribute the failings of water supply management not to the failure to guarantee entitlements, but to the assumption that entitlements are a mechanism by which potable water can be supplied:

in the majority of countries . . . water has been treated as though it were available in unlimited quantities, and supplied at zero or low cost to consumers who resent the idea of water as an economic resource. Consumers, abetted by their governments, have clear notions of their water 'requirements,' and the task of water authorities has, until recently, been seen as supplying those needs, with cost a secondary consideration. Pricing for water services has been meagre and sporadic, and is normally incidental to cost-recovery, narrowly conceived. This 'entitlement' syndrome, relying on supply-side solutions to requirements taken as given, is unsustainable.

Winpenny 1994, 2

The reference to 'unsustainability' refers, in this case, to economic sustainability: the ability to recover costs in order to meet operations and maintenance requirements, and eventually fund network extension costs. The inability of many local states to mobilize revenues from users of the existing water supply system – frequently expressed as very low cost-recovery rates – is one of the widespread failings of municipally owned water utilities in developing countries. According to Winpenny, the 'entitlement' syndrome has additional 'perverse' economic effects, such as the encouragement of water-intensive industries, the encouragement of inefficient uses of water,



discouragement of technical innovation necessary for conservation, and under-investment in water infrastructure due to low revenues and consequent low profitability.

In essence, neo-classically derived arguments in favour of valuing water rest on the assumption that 'the failure to treat water as a scarce commodity lies at the heart of the [water industry's] problems'<sup>14</sup> (Winpenny 1994, 1), most frequently identified as water pollution, over-abstraction, and under-investment. This failure, caused by the (inter-related) factors of externalities, a 'political' support for the notion of water as a public good, and the under-pricing of water, is exemplified by subsidization of water production and non-volumetric consumption charges.

The above argument rests upon the assumption that flawed management by the state, due to structural defects in public sector management of water, is responsible for the well-documented poor quality and low penetration of water supply systems. The state, argue organizations like the World Bank, is 'overextended' (World Bank 1997a); only by 'relaxing the government's grip' can countries 'free up public resources for high-priority activities; pave the way to better, cheaper services; and unlock opportunities for private sector development' (World Bank 1997a, 61–2). The underlying assumption is that the market is more efficient than government at providing basic services. Given 'state failure', 'there is no good economic reason for state ownership to persist in tradable-goods industries' (World Bank 1997a, 64).

Underpinning this statement is a two-pronged discursive move. First, the category of tradable goods has been expanded, and the utility sector simultaneously re-conceptualized as potentially profitable, rather than a service provider in need of subsidies. Second, water scarcity is depicted as a universal condition; simultaneously natural, justifying cost-reflective pricing and the commercialization of water, and social, the result of flawed public management. Both depictions of scarcity may serve as a further justification for water privatization and commercialization.

Proponents of water privatization in both cases rely, if not always explicitly, on the concept of state failure – the notion that the private sector is more efficient than the public sector at delivering basic services – supported by evidence from rapidly urbanizing Third World cities, where most of the estimated 1 billion people who lack daily access to sufficient amounts of clean water live (WHO 2000). Their arguments converge with those who promote the management of water as an economic (rather than public) good in order to promote water conservation. Privatization and

commercialization are thus often accompanied by, and implicated in, a more generalized shift in the practice of deliberative democracy at the local level. The initiation of private sector participation contracts, for example, is often accompanied by a discursive rescripting of users as individual consumers, rather than a collective of citizens, and by a higher prioritization of environmental water quality standards. Yet opponents of privatization and commercialization often object to this alliance between commercialization and conservation. As a response to the Hague Declaration, the Declaration of the P7<sup>15</sup> at their fourth Summit in 2000 outlined principles of 'water democracy': decentralized, community-based, democratic water management in which water conservation is politically, socio-economically and culturally inspired rather than economically motivated (see also Shiva 2002). Rather than defending the state, water activists are increasingly outlining alternative visions of community-centred resource management (see, for example, IFG 2002).

These debates have increased in scale and scope over the 1990s, in part in response to the dramatic increase in private sector participation in the financing, construction, and management of water supply infrastructure. During the last 14 years of the century, 183 water and sewerage projects with private participation were initiated in 'developing' countries (Table 1), with a total investment of over US\$33 billion (World Bank 2001). The water sector is not unique; capital for infrastructure investment was increasingly sourced through the private sector during the 1990s. Capital may be raised by the state through leasing or divesting infrastructure to private firms, and these same private firms – who are assumed to have better access to loan finance than governments – are also contracted to operate, and in some cases build additional infrastructure. The move to the private sector began in the 1980s; between 1988 and 1992 alone, US\$1.6 billion in revenue was obtained by 'developing' countries from the privatization of public enterprises, one-third of which came from the privatization of infrastructure entities (World Bank 1994, 105).

These capital flows are being mobilized to stave off what the World Bank portrays as the possibility of 'severe water shortages' in developing countries, and to meet tougher environmental standards in developed countries (McGuinness and Thomas 1997, 329). A significant proportion of this finance, insist multilateral credit organizations like the World Bank and bilateral agencies like DFID, must come from the private sector; development banks and other funding institutions are 'increasingly prescribing the introduction of Private Sector Partnerships as a condition of lending' (British Water

1998, 11). The level of investment in water supply is likely to increase, given a combination of increasing pressure on water resources, and increasing demands, particularly in conurbations experiencing rapid rates of urbanization.

#### *Commercialization of water supply management*

Although privatization and commercialization are not dependent variables, private sector participation frequently entails some degree of commercialization. Whether through a reworking of infrastructure management goals, or through a redefinition of principles underlying the business of water supply, water ceases to be a service, supplied at subsidized rates to citizens as a right, and is increasingly viewed as a commodity, sold to consumers on a profit-making basis of willingness-to-pay rather than ability-to-pay.

Commercialization is often justified by the 'perversity' of public sector management, which is most forcefully revealed, as it is argued by private sector participation advocates, in the effects of water subsidies, which 'almost always benefit the non-poor disproportionately' (World Bank 1994, 80). The under-pricing of water by governments in order to keep water tariffs low is a widespread policy in both 'developed' and 'developing' countries. In the latter, however, low penetration rates imply that only a small, and typically a wealthier-than-average proportion of the population are connected to the public water supply system. The poor typically rely on private water vendors or public standpipes and 'typically end up paying much higher prices for infrastructure services or their substitutes' (World Bank 1994, 81), in some cases indirectly subsidizing the public water supply system (Swyngedouw 1997). The solution is to enlarge the public water supply system – but not necessarily to decrease the prices paid by the poor.

By contrast, the high prices paid by those relying on the 'informal' water sector are interpreted as evidence of their 'ability' (or sometimes, and more dangerously, their 'willingness') to pay for water services, at rates high enough to ensure cost recovery, and even profitability of water supply systems. As one DFID publication notes:

People in poorer areas where piped supplies are not available usually have to buy their water from vendors. Experience around the world shows that the cost of buying water in this way is far higher, from a low of 4 times up to 100 times more than from public utilities. This mostly affects the poorer members of society who are least able to afford to pay – but pay they must, in order to survive. The ability is there to

pay a reasonable price for an appropriate level of water and sanitation services; the willingness to pay has to be developed prior to and during [the introduction of] Public Private Partnerships.

DFID 1998, 10

The underlying assumption in the DFID argument is that full cost recovery pricing is both possible and desirable. Users should no longer be charged on the basis of the 'ability-to-pay principle' – the principle which typically underpins water pricing in public, non-commercialized systems which implies that users should be charged according to their ability to pay. Rather, users should be charged on the basis of 'economic equity' – the principle that users of a utility service should pay, as near as possible, the costs they individually impose on the system (the 'benefit principle'). In other words, a commercialized system which adopts a 'full cost recovery' pricing policy is the preferable solution to the water supply needs of the urban poor. The unspoken caveat is that inter-generational equity is not considered; no redress is possible for the past subsidization of the typically 'non-poor' at the expense of the poor. Whereas the connected segment of the population – typically more affluent – enjoyed both capital and operating expenditure subsidies, the poor must pay the full cost of connection and supply.

In practice, this recommendation has not proved to be workable, given the low ability-to-pay of many domestic water users in the South. Post-privatization, a continuation of cross-subsidies frequently occurs. In Buenos Aires, for example, where the water supply and sewerage systems were privatized by concession in 1993, an initial pricing scheme which charged the full cost of connection to new users was discontinued after widespread non-payment or refusal to connect was found to be occurring in poorer zones of the city. Connection charges were replaced by a blanket charge to all household connections, with the proceeds intended to fund network expansion. In Chile, water users receive a bill for the full cost of the service, but poor households can obtain a partial rebate on water charges via the municipality (Serra 2000). In South Africa, an initial attempt at implementing full cost recovery pricing policies – despite the constitutional guarantee to 'sufficient water' – stalled after large cholera epidemics. A 'lifeline' water supply policy, in which a pre-set volume of water is provided at minimal or no cost to poor users, has now been implemented, but the question of allocation of capital costs, and operating and maintenance expenses remains unresolved in many communities (Bakker and Hemson 2000; Bond 1998).

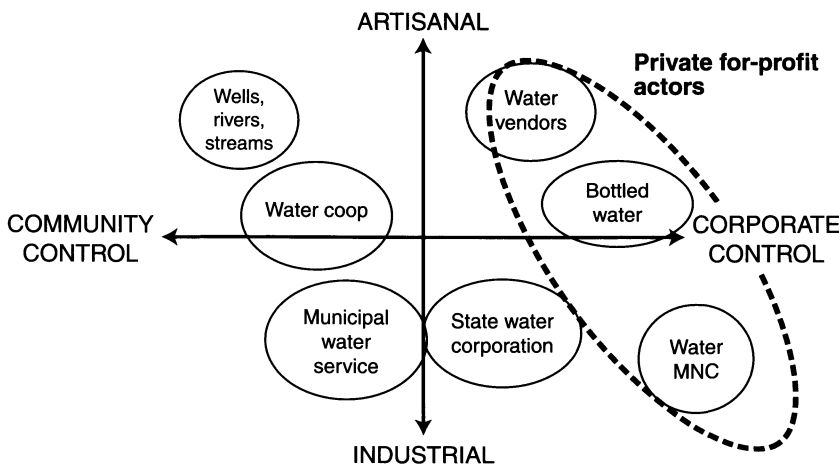
**Urban waterscapes and the territorialization of corporate power**

Water as a resource circulates through the hydro-social cycle – a complex network of pipes, water law, meters, quality standards, garden hoses, consumers, leaking taps, as well as rainfall, evaporation, and runoff. The water supply ‘network’ thus extends far beyond the pipes conveying water to customers’ taps; it is not bounded by the physical infrastructure that abstracts, treats, and distributes water, and removes wastewater. Exchange relationships, demand patterns, customers’ expectations about water quality and pressure, laws at national and supranational levels concerning water quality, rainfall patterns, even climate change shape the flow of water through the pipes. Water circulation, in short, is dependent upon institutions and practices as much as on the hydrological cycle; it is not only socially produced, but also socially enacted (La Porte 1994, 271).

The fixed capital embodied in the material network of mains, pipes, pumps, reservoirs, and sewers can thus be viewed as an artefact of the hydro-social cycle, shaped by successive generations of social, technical, and economic practices. As an artefact of urbanization, water supply networks in cities in the North embody the successive phases of industrialization and corporatization of water management. In cities in the South, in contrast, networks are often partial; water and wastewater are metabolized through a complex temporal and spatial weave of water use practices and methods of disposal. Industrial and artisanal modes of production, state and private sector ownership, collective and corporate institutional

mechanisms of control of water production frequently co-exist (Figure 1). In most cities in the South water supply networks do not operate homogeneously over the urban landscape; they will overlap with, and be inter-penetrated by, alternative service delivery mechanisms. The metaphor of the ‘archipelago’ – spatially separated but linked ‘islands’ of networked supply in the urban fabric – perhaps better captures this complex layering of use-values and modes of production.

Within urban areas, both corporate<sup>16</sup> and non-corporate organizations are involved in the provision of water supply; this is unsurprising, given that corporate modes of organization tend to be created when water supply is industrialized and extensive water supply networks are created. Simultaneously, small-scale, unincorporated private (often informal) water supply businesses operate – particularly in informal settlements and poor neighbourhoods. Community water supply cooperatives, in which users are typically involved in governance as well as operations and maintenance of water supply systems, are also relatively common in urban areas. The public–private dualism thus breaks down when attempting to analyse water supply provision in cities of the South. ‘Privatization’ is better read as an overlapping set of strategies – industrialization, corporatization, and internationalization – of water supply in zones where a high degree of non-corporate activity already exists. Not only do management responsibility and/or ownership move from the public to the private sector; as depicted in Figure 1, the mode of production of water supply is transformed from artisanal to industrial (i.e. network infrastructure) production. Institutionally, the experience of water supply provision for urban



**Figure 1** Modes of urban water supply provision

residents undergoes a transition from community to corporate control. The multi-dimensional nature of these changes has led some water managers in the South to refer to the transition underway in water provision as a 'transformation', rather than merely 'privatization' (Inglese 2002).

This 'transformation' is most acute in socio-economically marginal urban areas, in which urbanization both necessitates and drives the industrialization of water production and corporatization of control of water sources. The displacement of artisanal activities (themselves sometimes highly exploitative) by provision via corporate-controlled networks implies the formalization of the enclosure of the hydro-commons, and the territorialization of state power – whether as regulator or owner of the water supply infrastructure. This is often accomplished by the physical burial of watercourses, regularization of legal land tenure and cadastral records, creating a series of (occasionally overlapping) monopolies through the containment of accessible water in underground networks. Regulations prohibiting self-provision frequently accompany this transformation. In the cities of Jakarta (Indonesia) and Cochamba (Bolivia), where private sector concession contracts were signed in 1997 and 1999 respectively, privatization occurred together with a change in municipal bylaws establishing the right of the state to regulate groundwater abstractions, and the right of the private company to charge for abstractions from private wells within the concession boundaries (Braadbart 2001; Crespo 2002; Laurie and Marvin 1999; Marvin and Laurie 1999). In the case of Cochabamba, some attempts were made to enforce these provisions of the contract, contributing to the resentment of local users and to the strength of the broad-based coalition of peasants, farmers, organizer labour, environmentalists and women's groups, which succeeded in forcing the government to cancel the private sector participation contract.

As the above anecdotes demonstrate, commercialization is a mechanism whereby the state progressively expands – in a spatial and institutional sense – regulatory authority. In urban areas in the South, the local state in the past typically failed to extend public services to socio-economically marginal areas of the city, for reasons discussed in the section 'Water sanitization and urbanizing areas'. The result, as argued above, was that state power did not operate continuously over the urban fabric, but rather in the case of public services was constructed as an 'archipelago' highly correlated with socio-economic status. With the retreat of the local state from a role as operator of public services in the context of a new phase of

water supply privatization taking place, the urban fabric is being homogenized, with universal service provisions backed up by the state as regulator (however imperfect). The 'retreat of the state' in this case deserves close re-examination, as a partial retreat and partial expansion of local state activity, and also as a highly ambiguous process for the urban poor, who may have fewer nominal entitlements as citizens, but who are promised greater claims for substantive entitlements.

This process should be clearly distinguished from 'privatization' in rural areas, which often entails the dismantling of relations of mutual cooperation amongst water users, enacted through juridical and regulatory mechanisms that permit (and often encourage) private individuals and corporations to capture formerly community-controlled and managed water sources (Orellana forthcoming). Just as in urban areas, privatization in rural areas entails a shift in power to, or amongst, local elites. In rural areas, however, given the lack of an infrastructure network and economics of scale and environmental conditions that mitigate against building networks, privatization does not usually result in the industrialization or internationalization of water supply provision, which are far more likely to apply to water resources production for primary extractive and secondary industries. In Bolivia, for example, privatization of water supply by international companies has been restricted to larger urban areas (the cities of La Paz and Cochabamba). In rural areas of the country, in contrast, international water companies have focused on water resources with export potential – for sale to Chilean mining companies, for example<sup>17</sup>.

## Conclusions

Whether in rural or urban areas, water supply privatization redraws the hydro-social landscape. Urbanization, in many cases, facilitates the industrialization of water supply, enabling the creation of the networks that in turn enable corporate control, whether public or private. Given the economies of scale required to attract private sector investment, the vast majority of private sector participation contracts in water and sewerage currently operate in urban areas. Private sector participation projects in rural areas pose very different technical and institutional challenges (Bakker and Hemson 2000). We should not be speaking of water privatization in general, but of the privatization and commercialization of either urban or rural water services in particular.

This paper has attempted to highlight the urban dimension of water supply privatization and commercialization in several ways. First, this paper

has argued that 'privatization' is in many cases a misnomer, given the diversity of water use provision and disposal practices in urban areas. 'Privatization' is better read as an overlapping set of strategies – industrialization of water supply production, the territorialization of corporate power in zones where a high degree of non-corporate activity already exists, and the internationalization of control of water supply.

Water supply privatization is from this perspective understood to be one dimension of a broad-based process of transformation – institutional, social-economic, technical – as both a response to the needs of capital and as a mechanism of the redistribution of power amongst local elites. This 'transformation' is better understood as three inter-related shifts in water supply management: industrialization of water supply production; corporatization of water supply management; and internationalization of water supply control and regulation. The experience of this 'transformation', particularly for the urban poor, is of the inter-related processes of increasing territorialization of corporate power (both public and private), enclosure of the hydro-commons, and the increasing penetration of the interests of (largely urban) elites into not only rural areas but also peri-urban and economically marginal urban areas. This change is more multi-dimensional than privatization processes in the North, which tend to occur in urban areas in which high levels of network penetration exist, and where the intervention of the state in the urban fabric is more spatially homogeneous. The metaphor of the 'network' is widely employed by water supply managers, multilateral credit agencies, and development organizations alike, but is rooted in a Northern bias. A metaphor that better captures the experience of urban water supply in much of the South is the 'archipelago'. Whether privatization will, as its proponents promise, convert archipelagos into networks remains to be seen; to date, there are few examples of private sector participation contracts which have systematically countered the spatial differentiation of water supply access in urban areas. Privatization thus remains a highly ambivalent process for urban water users, particularly the poor, given the associated reworking of substantive and procedural entitlements to water supply. Analyses of water privatization in cities in the South must address this multi-dimensional transformation, in which the involvement of the private sector in water supply management is implicated in a process which reconfigures not only water supply regulation and urban waterscapes, but also the entitlements of water supply users, and the practice of deliberative democracy at the level of lived, daily experience.

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Helpful comments were received from Bill Dorman, Alex Loftus, Philippe Le Billon and three anonymous reviewers. Presentation at the DARG special session on 'Landscapes of change' at the IBC conference in Belfast (2002) provided the original impetus for this article; the encouragement of Chasca Twyman and Frances Harris was crucial to its completion.

### Notes

- 1 This is more true for water supply (i.e. water supplied in reticulation networks) than for water resources (i.e. bulk water). There are many more examples of water supply privatization than resources privatization and commercialization, Chile, the southwestern United States, and the Canary Islands being the most frequently cited examples.
- 2 For references on 'developing' countries, see, for example, Batley (1996), Blokland *et al.* (1999), Cook and Kirkpatrick (1998), Franceys (1997 2000), Johnstone and Wood (2001), Lee (1995 1996), Nickson (1997), Rivera 1996, Roger (1999), Rondinelli and Cheema (1988), and Shirley and Walsh (2001).
- 3 For an analysis of the 'cross conditionality' which has been imposed on the water sector in several countries, see Grusky (2001).
- 4 The 1992 International Conference on Water and the Environment set out what became known as the 'Dublin Principles': Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment; Water development and management should be based on a participatory approach, involving users, planners and policymakers at all levels; Women play a central part in the provision, management and safeguarding of water; Water has an economic value in all its competing uses and should be recognized as an economic good. The Dublin Principles have been adopted by numerous international, multilateral and bilateral agencies including the World Bank.
- 5 The Ministerial Declaration of the Hague on Water Security in the twenty-first century followed the inter-ministerial meeting known as the '2nd World Water Forum' in 2000. See <http://www.worldwaterforum.net>.
- 6 The Water Supply and Sanitation Collaborative Council, located in Geneva, is a non-profit organization that acts as an 'international policy think tank' on water management.
- 7 The Cochabamba declaration followed a meeting of several hundred people in this Bolivian city concerned about the involvement of private sector corporations in water supply management. See <http://www.canadians.org/blueplanet/cochabamba-e.html> (Barlow and Clarke 2002).
- 8 The Group of Lisbon is a group of distinguished scholars from around the world which analyses globalization, and calls for new types of economic governance. See Petrella (2001).
- 9 The UN's Committee on Economic, Social and Cultural Rights argued in its general comment (released 26 November

- 2002) that the right to water was implied in Covenant articles 11 and 12, and that states party to the Covenant of Economic, Social and Cultural Rights (which entered into force in 1976) have the duty to realize, without discrimination, the right to water (CESCR 2002). The Covenant has been signed and ratified by 145 states, and signed but not ratified by seven states (including the United States) (UNHCR 2002).
- 10 The Constitution of the Republic of South Africa guarantees the right of citizens of access to 'sufficient water' (Act 108 of 1996, section 7(2)).
  - 11 Malin Falkenmark, a Swedish hydrologist, first proposed the concepts of 'water stress' and 'water scarcity' in the 1980s, in order to provide a baseline from which to measure threats to water security; these benchmarks are now widely accepted. 'Water scarcity' is reached when a region has less than 1000 m<sup>3</sup> of renewable fresh water available annually per capita. 'Water stress' occurs when a region has between 1000 and 1667 m<sup>3</sup> of annual water availability per person (see, for example, Falkenmark 1986 1989 1990).
  - 12 Water is subject to multiple market failures – most importantly, natural monopoly and externalities.
  - 13 A merit good may be defined as a good or service 'whose consumption is believed to confer benefits on society as a whole greater than those reflected in consumers' own preferences for them' (Black 1997, 298).
  - 14 Winpenny, a research fellow at the government's Department for International Development (DFID), has written one of the few books on this subject to date (Winpenny 1994). See also Merrett (1997).
  - 15 The P7 (now P8) annual conference was convened for the first time in June 1997 by the Green Group in the European Parliament, as an alternative Summit to the G7 (now G8). Representatives from the world's poorest countries attend the conferences, which focus on the structural causes of and solutions to poverty.
  - 16 'Corporate' is here defined as an organization recognized in law as a 'person', characterized by limited liability and bureaucratic hierarchy. In addition to private companies, many governments assume corporate forms (e.g. 'municipal corporations').
  - 17 See the Comisión para la Gestión Integral del Agua en Bolivia (CGIAB) site (<http://www.aguabolivia.org>) for a discussion of Bolivia's 'Ley de Exportación de Aguas'.

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