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Crisis, What Crisis? Challenging the Urban Water Challenge of the Twenty-First Century

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CRISIS, WHAT CRISIS? CHALLENGING THE URBAN WATER CHALLENGE OF THE TWENTY-FIRST CENTURY

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ABBREVIATIONS

CAR	Central African Republic
IMF	International Monetary Fund
MDG	Millennium Development Goals
MNC	Multinational Corporation
PSP	Public Sector Participation
PwC	PricewaterhouseCoopers LLP
SAP	Structural Adjustment Program
UN	United Nations
UNICEF	United Nations Children's Fund
WHO	World Health Organisation

CRISIS, WHAT CRISIS? CHALLENGING THE URBAN WATER CHALLENGE OF THE TWENTY-FIRST CENTURY

1. INTRODUCTION

1.1 Water, Water Not Everywhere…?

Water is a fundamental part of the metabolism of all living things. It is needed in the processes of respiration and photosynthesis, through which living beings are able to transform energy into a useful form to carry out the processes of life. Human beings can, at best, survive three days without water; other organisms can last longer, but ultimately, all will die without new sources of water.

This natural reliance upon water has been transformed into a social reliance by human beings. Water is now a vital part of the industrial process, used to aid chemical reactions, cool machinery, wash materials, and transport goods and labour. Through the rising complexity of human society, water has taken on a social necessity to maintain the current material standard of living, as well as the metabolic function of each individual person. More than any other part of nature, water is the most important resource in the world.

This social reliance is now the cause of social conflict over water ownership, quality, provision and distribution. Biro (2005) calls it the oil for the twenty first century. Jordan has publicly stated that only water would make it go to war with Israel. In South Africa, Bolivia, Ecuador, China, Bangladesh and the USA, popular protests have emerged over distribution of water. Today, the world is on the brink of a water crisis as more and more of the world's population face conditions of water scarcity. This is not to say that the world is running out of water: the total amount of water in the world remains constant. Yet, the social distribution of water, in terms of both its quantity (political economy) and quality (political ecology) has never been so important. The combination of a growing urban population, expanded industrial production, climatic change and increasing social inequality at global, regional and local scales makes the pressure on potable, plentiful water supply increasingly severe. Already, 1 billion are without enough drinking water, (de Rivero, 2001). By 2050, 2 billion people are expected to be living under conditions of water crisis. A further 5 billion are expected to live in conditions of water scarcity (Biro, 2005). It is highly likely that this stress will be distributed very unevenly, falling mainly on the countries of the Global South[1] and predominantly on the poor urban populations of their major cities. The provision of water to the urban poor is therefore one of the major humanitarian challenges of this century.

1.2 The Urban Water Challenge of the Twenty First Century

The United Nations considers 2000 cubic metres of drinking water per year the minimum per capita requirement for a healthy and active life. Algeria, Burundi, China, Egypt, Ethiopia, Haiti, India, Jordan, Kenya, Morocco, Oman, Pakistan, Peru, Rwanda, Sri Lanka, Yemen and Zimbabwe are close to that limit (de Rivero, 2001). This assumes an equal distribution of potable water amongst the population. The reality is that are already obtaining less than this quantity of water. In Algiers, Amman, Cairo, Casablanca, Lima and Tunis, this condition already exists. China has dire water scarcity in twenty-two cities. It is likely to spread to other major cities of the South for certain social groups (*ibid.)*.

In 2005, 55% of the global population live in cities. The numbers are rising at 150,000 a day. By 2020, it is expected that 70% of the global population will live in cities, 500 of which will have more than a million residents, with 40 having between 7 and 20 million people. Most will be in the South, and many will be in areas of already existing water stress. Kinshasa is projected to reach 7 million people, Lima 10 million, Manila, 14 million, Cairo 13 million, Dhaka 18 million, Delhi 18 million, Karachi 21 million, and Shanghai 22 million (*ibid.)*. Theses cities will emerge in states that are not backed by the massive industrial and agricultural production required for the provision of sufficient food, energy and water for New York, London and Tokyo as they grew larger. China, El Salvador, Ethiopia, Ghana, Haiti, India, Kenya, Morocco, Pakistan, Peru, Rwanda, Tanzania, Uganda and Zimbabwe sit simultaneously – and perilously – at the

top of the urban population growth tables and at the bottom of the water consumption per capita rankings.

This emerging future is a terrifying one. The countries in which the major population growth is taking place are generally the most ill equipped to deal with the problems of a lack of water supply for the urban population. They have not the capital, technological development or access to the global economy to promote their national capital. Furthermore, they tend to sit in the drier, more climatically volatile parts of the world, hugging the tropics, desert bands and equator. On top of this, many are characterised by internal conflict along racial, ethnic and religious lines: 23 of the 28 armed conflicts that took place between 1989 and 1997 were internal, in places such as Rwanda and Sierra Leone. The task of providing potable water to populations under such difficult natural, social and economic conditions is immense. This is the challenge.

1.3 Providing Water to the Urban Poor: The Purpose of this Dissertation

This dissertation aims to contribute to Development and Marxist literature; to untie some of the many myths surrounding the privatisation of water, the role of bilateral donors as arms of the capitalist State; and to look at the relationship between cities, nature and society in meeting the water challenge.

Development theory and scholars in general have tended to stay at the surface of analysis, looking at the role and impact of human agency in creating conditions for improvement and 'development'. This is valid, but it remains within the realms of 'band-aid' (Oldfield, 2001), sticking plasters over the worse excesses of capitalism without actually challenging the structural processes that interact with agency to produce the particular spatial logics of underdevelopment and uneven development. Those that have tackled this directly have come from a wider field (such as Sociology or Geography) and have predominantly used a historical-geographical materialist analysis. This mode of analysis, building on the initial insights of Marx, has a direct relevance to development theory precisely because it is the functioning of capitalism infused with current social power relations of capitalist society that causes the inequalities with which the world is today faced. Water is at the heart of nature-society interactions. Marxist analysis has its roots in the concept of the 'metabolism' of nature through the labour process, so is well placed to address how nature and society relate.

There are two major problems in much – often dominant – development theory and practice with regard to water. Firstly, it tends to accept the dualisms of nature and society posited by liberal economics and philosophy, and in doing so accepts the rhetorical constructions of water crisis and scarcity, and the need to 'overcome' nature (Gleick, 1993; Postel, 1992; 2001). The Millennium Development Goals (MDGs)[2] are a direct outcome of this. Secondly, much of the politicised debate is ill informed as to the deeper reasons as to why water provision has not taken place. This is based on objecting to the outcomes of a mode of production, but not on the mode of production itself. The current neo-liberal paradigm dominating politics and global institutions has also been accepted by the majority of major NGOs and campaigners. The push for water reform follows the removal of political analysis from the field of understanding. This dissertation attempts to bring it back. The consequences have the potential to be profound.

2. HISTORICAL-GEOGRAPHICAL MATERIALISM AND THE URBANISATION OF WATER

2.1 Water, Capital and Society

The social relations of capitalism have now spread across the globe to encompass all spaces, people and nature. Predicated on the basis of the social 'metabolism' of nature, capitalism seeks to transform use values into exchange values for capital accumulation. This is achieved through the harnessing of labour power and capital in a production process that allows the production of all the commodities that reproduce and expand the capitalist system. This incessant, necessary drive for the accumulation of capital – 'accumulation for accumulation's sake' (Marx, 1973) – drives the ever accelerating expansion of capital.

Water occupies a unique place in the role of nature-society relations. Possessing fundamental biochemical properties, it has

always attracted cultural and political discourses surrounding it. The Latin word *rivus* is a stream or brook. It is the root of the modern word 'rival', meaning someone using the same watercourse from the opposite bank. Water has been at the heart of conflict and struggle between peoples since prehistory. It has also been fundamental to the location of cities. Particular socio-spatial patterns of water availability are found in the cities of the developing world that are produced by the interaction of a number of processes.

By combining an intellectual understanding of the relationship between the city and nature, the production of water and the processes of the global expansion of capital, water provision to the urban poor can then be investigated. The combination of politics, economics and ecology that produce configurations of urban water provision in cities can be investigated to understand why the urban poor remain excluded from equitable water provision in the South. Furthermore, it acts as the basis from which to promote an alternative water politics.

2.2 The Dialectics of Nature and the City: an Ontology of the Urban

The city is a result of the historical-geographical process of the urbanisation of nature. It is the outcome of socioecological processes in which labour and capital are harnessed to metabolise nature into the range of use values society requires to reproduce itself. The urban is therefore a process of socioecological change, where nature and society are fundamentally combined in production: the city is the outcome of the nature-society dialectic. This ontology of the urban follows Harvey (1982) and Lefebvre (2005), who see the urban not as a 'thing' but as a process. For Harvey, all things can only be talked about in relationship to other things. The historical-geographical materialist analysis sees the urban fundamentally as a process in the general circulation of capital and commodities, the mediator of socio-natural relationships.

Swyngedouw (1997; 2004) imagines he is in Piccadilly Circus. All around is urbanised nature; in tarmac that lines the roads, and in coffee sipped at pavement cafes. Hot sausages in the restaurants, neon signs and glass bus stops, all of these are urbanised nature. The city allows the acceleration of capital and therefore accumulation, through concentrating socially necessary use values in one place as socio-natural commodities. This is what has come to be known as the urban. Furthermore, Castells (1977) sees the specific function lying in the reproduction of labour in consuming these use values though this neglects the ideological, symbolic and political functions of the city. He argues: 'the urban seems to me to connote directly the processes relating to labour-power other than in its direct application to the production process' (Castells, 1977: 236).

The ontology of the urban used here is that it is a dynamic, contradictory and dialectical *process*. The investigation of water addresses how water is urbanised: in other words, how water, as nature, is produced as social nature and inserted in the circulation of capital at local and global scales, and how this is reflected in the spatial distribution of water in cities of the developing world. Process has ontological and epistemological priority in the urbanisation of water and the metabolism of the city (Swyngedouw, 2004).

2.3 The Production of (Urban) Nature

Urban life could only emerge through the concentration of a large surplus of production from the rural hinterland in the city to sustain those parts of the division of labour not involved in the immediate transformation of nature. The socially necessary surplus production of nature allows the division of society into classes of capitalists (owning the means of this production) and labour. The State emerges as the necessary administrator of access to nature. For those that do not work upon nature to be able to extract surplus from it, property regimes and an unequal spatial distribution of nature is required, which the State acts to enforce (Smith, 1984).

In expanding production for exchange, humans do not only produce immediate nature (excess grain), but the entire societal nature of their existence (say the urbanised nature of the New York skyline). The relationship to nature becomes increasing differentiated and abstracted through the commodity form. External nature is subjected to the labour process to emerge as the social matter of universal nature. This dialectic of external and

universal nature is resolved in the commodity as socio-nature as a process in the circulation of social-natural capital, socially fetished as a thing in itself. In the case of water, external water in rivers, aquifers and lakes, is collected, cleaned and filtered through the application of labour and capital and is then urbanised and distributed as part of the metabolism of the city (Smith, 1984; Castro, 2003; Bakker, 2003).

Under capitalism exchange value becomes the predominant expression of value. External nature becomes the concrete and material. It is seen to have no inherent value but is an abundant gift of nature. Universal nature is abstract and derivative of the abstraction from use value inherent in exchange value. Human nature produces the first, whilst human social relations produce the second. Each piece of matter exists in each form simultaneously. This includes labour power. Yet this division is *not* natural, as the neo-liberal paradigm would argue, but entirely socio-historically specific. The fundamental issue remains thus: how is nature (water as social nature) produced and who controls its production. This makes up part of the productionist logic of water.

2.4 Productionist Logic of Water and Collective Consumption

Castells (1977), extending from his ontology of the urban as the site for labour power reproduction, sees the role of the State in managing the relations of capital mediated through collective consumption. He argues that the spatial unit of everyday life is increasingly structured by the requirements of the reproduction of labour. Hence, the Keynesian State emerged to provide the use values of collective consumption required to ensure the daily and generational reproduction of labour-power. Urban space and the reproduction of labour-power are increasingly dependent upon and influenced by the level and form of state provision of the necessary means of consumption.

The State attempts to offset the potential for a crisis in the provision of collective consumption. There is no reason why what is profitable to produce for exchange should coincide with what is most socially necessary to consume as investment of capital is dictated by the effective demand, not social need. The contradictions between capital as a class needing efficiently reproduced labour and capitalist individuals wishing to maximise accumulation has meant that the State has stepped into provide those goods capital would not provide.

This both ensures that capitalists as a class can be maintained by heading off class struggle, but also to ensure it can reproduce itself as well as the working classes. Water remains a key collectively consumed commodity, but due to the State operating within the capitalist system, its focus on water has been still to produce it as a commodity. The State has acted as a mass consumer, creating effective demand. As such, there remains a contradictory preoccupation with the production and transmission of water, not its distribution and consumption. In the developing world, the full range of Keynesian welfare state collective consumption goods were never provided, and the size of the capitalist labour force has remained relatively small (de Rivero, 2001). This is a crucial insight.

The ‘productionist logic’ of water, where it remains seen as a profitable commodity for exchange, helps to create an artificial scarcity of water so promoting private sector investment, and a desire to apply technology to overcome a ‘problem’ with nature (Gandy, 1999). A dialectic emerges of low production and subsequent investment in increasing that production through technological structures. State and Market led systems have both used this, drawing on the discourses of modernity and external nature to achieve ‘progress’ through power over nature.

A technological fix is constantly sought to overcome low production and to conquer ‘natural’ scarcity. The dialectical relationship between nature and society is hidden as both water and the technology of its production into potable, urbanised water are conceived of as things in themselves. The productionist logic – contrary to the historical-geographical materialist analysis – sees not the relationship between things, but the things in themselves. Despite water being a process in the circulation of capital, the reproduction of labour-power (and hence the urban) and a commodity produced for exchange – in sum urbanised socio-nature

– it is fetished[3] as a thing in itself, external to politics, contest and competition except in the market place.

2.5 Capitalism, and Accumulation by Dispossession

Only under conditions of industrial capitalism is money capital employed to produce commodities to create more money capital. All other forms of production are based on use value. Capitalists only produce use values in order to realise them in the market as exchange values. Driven by competition between different producers, the capitalist that does not successfully compete falls into the working class and is forced to sell their labour also. The drive to accumulate is the basis under which capitalism has expanded spatially across the whole globe (Hobsbawn, 1994; Marx ([1848] 2001). Marx shows that capitalism has within it a tendency towards a falling rate of profit, as competition, expanded and accelerated production and investment in fixed capital reduce the surplus value inherent in each commodity even as the number of commodities produced rises. This is overcome by increasing the organic composition of capital (increasing the amount of machine production in exchange for labourers), by increasing the rate of exploitation of labourers, or by relocating to new spaces where the relative costs of labour power are lower. The latter option – the 'spatial fix' – has allowed capitalism to spread across the world, and has been associated with the development and propagation of imperialism.

The tendency for the rate of profit to fall also encourages the diversification of production into new commodities. In order to stave off inherent crises, where overaccumulated capital and unused labour can not be profitably engaged, capitalist production creates new needs. Hence the division of labour increases and the range of commodities grows. In order to facilitate this, capitalists seek new basis' of production. Through what Marx termed the 'iron heel of primitive accumulation', colonial powers stole resources to be handed over to their own capitalists for use in capitalist production. This primitive accumulation has its first historical appearance in the enclosure of English common land by local elites driving peasant farmers off the land and into productive factories. This experience has been repeated in violent and accelerated forms across the face of the Earth, so that there is no space today that has not been absorbed into the conditions of capitalist production. Harvey (2003), refers to Marx' statement on the iron heel as 'accumulation by dispossession', a new non-territorial form of imperialism associated with destroying or taking over existing capital for (American) usage in a process of creative destruction (Berman, 1983).

This dispossession drives the expansion of Western capitalism, capturing resources across the world to fuel expanded accumulation. Formerly more often by invasion, now it is more often by buying assets, financial speculation, trade rules and regulations, and notably, in international aid and assistance. The latter process, spurred initially by the terrible excesses that Western capitalism has imposed on the South, has developed into a further tool for the expansion of possibilities for capital.

The use value of water provides a new way in which capital can expand through accumulation by dispossession. It is (usually) a commonly held resource, being administered by public bodies or accessible to individual households on a personal basis. Therefore, it offers a prime opportunity for a round of dispossession, commodification, and surplus value extraction to overcome crisis, increase the division of labour and further the accumulation of capital for the capitalist class. The formal privatisation of water in the cities of the South will be investigated through this aspect of historical-geographical materialism.

2.6 Synthesis: The Political Ecology of Urban Water Provision and the Discourse of Scarcity

The three general themes outlined above, when combined in analysing the forms of water provision in the urban centres of the developing world, offer a political ecology of urban water provision. By combining some important aspects of the philosophy of nature under modernity and the unequal functioning of capitalism in and through the urban realm, the reasons for water distribution can be revealed not as a result of scarcity and insufficient technology, but the social practices that cut across the

local and global, politics, economics, ecology and culture, capital and labour. The dialectics of water provision to the urban poor are complex, contradictory and multi-scalar. The historical-geographical materialist analysis, however, allows many views on the world, and though it cannot represent a full analysis, offers a comprehensive mode of investigation.

3. THE FAILURE OF PUBLIC WATER IN THE GLOBAL SOUTH

"*It is wise to bring some water, when one goes out to look for water."*
Arab Proverb

3.1 The State of Public Sector Provision in the Global South

Put starkly, the governments of developing world countries have failed to provide potable, secure water supplies to their own populations. The situation that exists in the developed world countries of Europe and North America – where virtually every household is connected to the water network and the quality is (usually) assured – is not replicated in the Global South. A survey of that failure is necessary.

The joint World Health Organisation (WHO) – United Nations Children's Fund (UNICEF) global water supply and sanitation assessment produced the following results for urban coverage (Figure 3.1). Whilst piped connections are the main source, 31% of African's, 6% of Asians and 15% of Latin Americans/Caribbeans are not served by any form of formal (predominantly public) water supply. According to the UN World Water Assessment Programme, in Africa, just 43% of urban households have piped connections. In Asia, this is 77%, and in Latin America and the Caribbean, also 77%. Conversely, it is 92% in Europe (which includes the Former Soviet Union and Eastern Bloc) and 100% in North America. Almost 1 in 5 will experience contaminated fixed supply (*ibid.*).

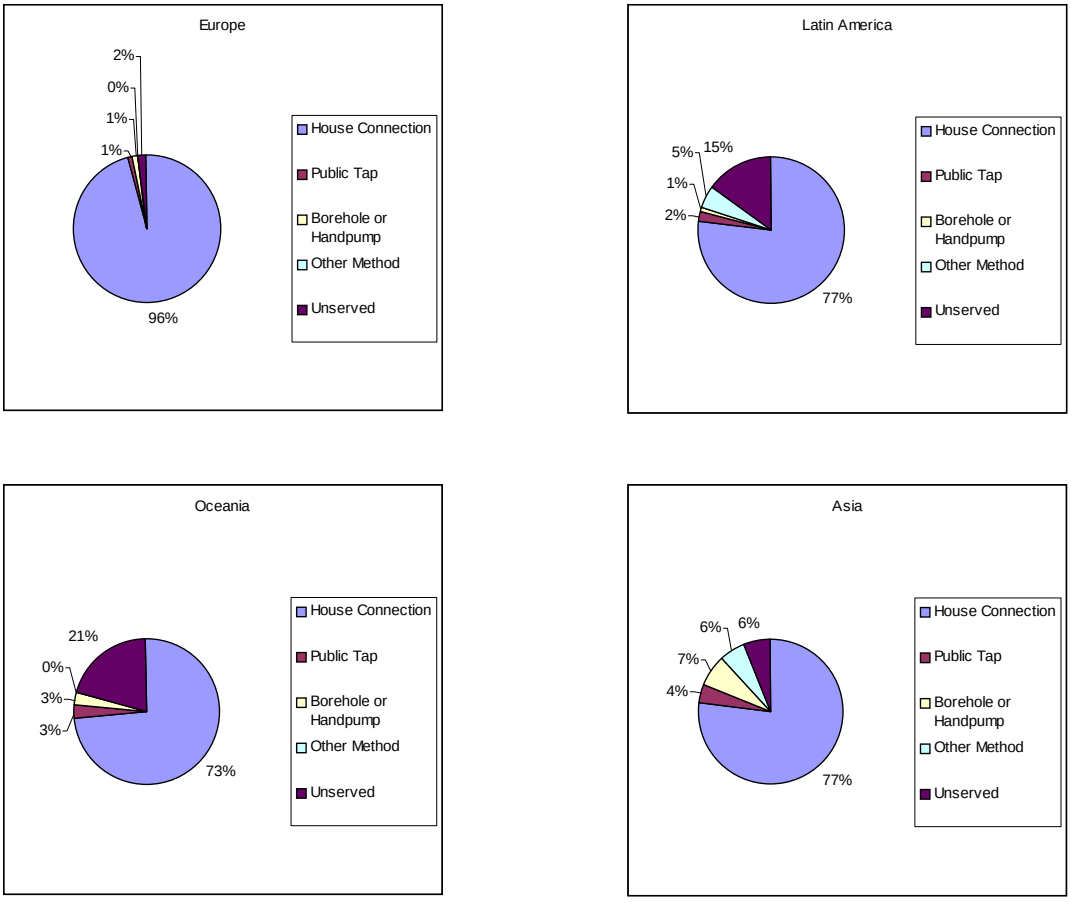

Figure 3.1: Global Urban Water Supply (WHO/UNICEF, 2003)

Yet these figures hide the subtleties of the situation. For the WHO, the following is considered 'improved' supply: household connections, public standpipes, boreholes, protected dug wells, protected springs, and rainwater collection**.** In many instances, flow is limited to a few hours a day, if at all. Household measures are misleading due to the method of surveying as a household connection can mean many different things. In some surveys it equates to access to an internal tap; in others it includes yard taps. The latter is also considered unserved in some surveys; in others household as a category extends beyond the physical existence of a dwelling to account for all family members. Crucially, in terms of water access and quality, there is little standardisation. Only one major international standard appears to exist; people living within 1 kilometre of a water pipe are considered to have access to water supply. In rural villages, whilst being far from ideal, this may be considered adequate, but in the urban sprawl of developing world megacities, a 1 km radius from a stand pipe could quite easily serve 100,000 people in Rio de Janeiro (*The Guardian, 4th October 2003)*. It is simply impossible to argue that this constitutes an adequate supply. Consequently, it is imperative to firstly accept widespread failure of the public sector to provide adequate coverage, and secondly, to realise that it is also impossible to accurately establish how many people do and do not have piped public potable water on demand. It is sufficient, however, to note that the majority of the urban poor do not enjoy the constant and reliable supply that the Southern urban elite and the populations of the North receive. Despite this, there is value in describing the distribution of public water in the cities of the South, bearing in mind the caveats previously outlined.

3.2 The Public Sector in Latin America

At least 20 million do not have basic access to water supplies in Latin American cities (World Bank, n.d.). This amounts to around 12% of the urban population not having *any* form of fixed water access. In a study of South American countries, Swyngedouw (1995) shows that urban sewage connections (a useful proxy for piped water connections) are at 23% in Bolivia, 36% in Ecuador, 55% in Peru, 60% in Venezuela and 79% in Argentina. In Mexico City, 60% of the public sector connection serves 3% of the population, whilst 50% share just 5% of capacity (*ibid.*). In Tegucigalpa, Honduras, the poor get one hour of water every four days. The wealthy suburbs have an uninterrupted supply: the city, however, claims it has 85% coverage. In terms of fixed infrastructure, this may be true, but it is not borne out in the real, everyday experiences of the poor. In Lima, 90% of the richest 10% have a direct water connection, whilst only 60% of the bottom 10% do. Only 53% are connected in Cochabamba, Bolivia (Marvin and Laurie, 1999).

3.3 The Public Sector in Africa

Half of all urban Africans do not have access to public water (Collignon and Vézina, 2000). As an indicative example, Devas and Korboe (2000) show that public water in Kumasi, Ghana, has failed. Piped water is available in most parts of Kumasi. However, the majority of poor households do not have individual connections. As a result, they are forced to purchase water from privately owned taps, at prices considerably higher than the cost of Ghana Water and Sewerage Corporation water. On the edge of the city, which is experiencing rapid urban growth, provision is even worse. Water pressure is often inadequate and the service not continuous. The impact is greater on the poor, women and children, 'not just in terms of cost and time spent collecting water, but also in terms of undermining informal sector businesses, such as food-processing, which depend on good supplies of potable water…[it is women] who operate such businesses and who may have to collect water at night…girls' education may be curtailed by the time spent collecting water' (*ibid*: 127).

Bond (1998) shows that in South Africa, up to sixteen protests over water supply are recorded each day in the poor areas of the city, where despite profound changes in the government regime the systematic exclusion of the poor from urban services continues. In Mombassa, Kenya, city authorities have used their limited budget to invest in piped connections to the hotels and swimming pools of the international

tourist hotels rather than serve the local people that work in them.

3.4 The Public Sector in Asia

McIntosh (2003) shows that the public sector coverage has failed to match population growth (Figure 3.2). Urban authorities have failed to deliver water to their populations. Connection rates are sometimes shockingly low, despite huge connection increases (Figure 3.3). Today, 7 million people in Delhi, 8 million in Manila and 11 million in Dhaka are without piped water connections. The public sector has failed to deliver catastrophically, leaving the majority of Asian urban populations needing to seek alternative sources of water supply.

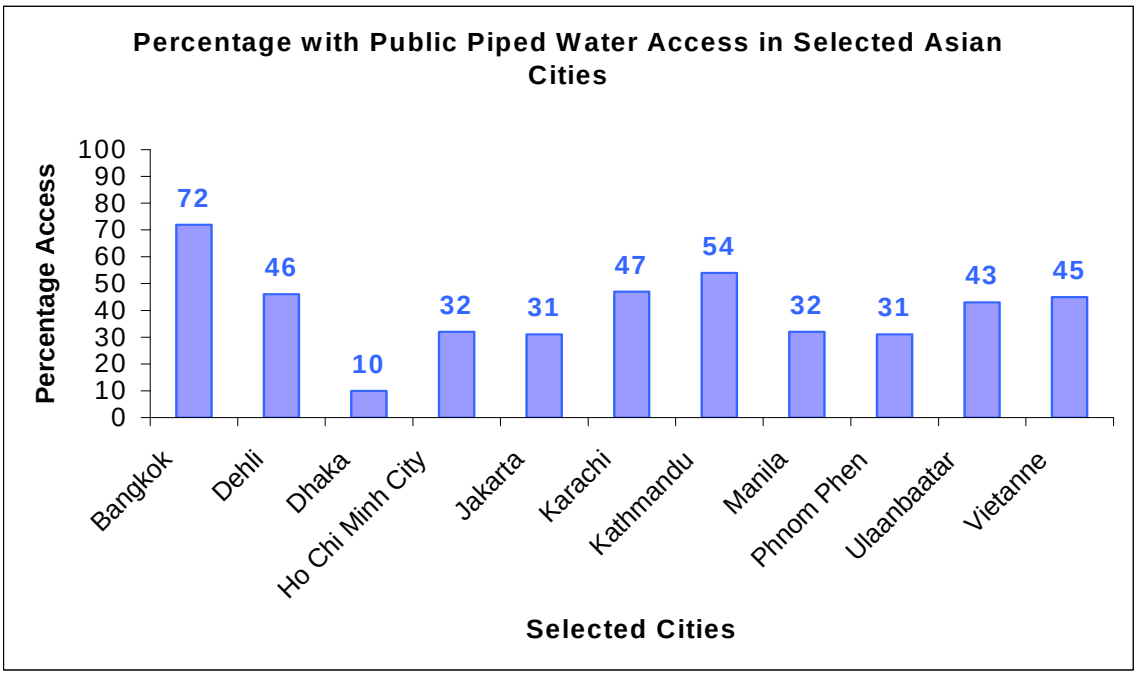

Figure 3.2: Public Sector Coverage in Selected Asian Cities (adapted from McIntosh, 2003)

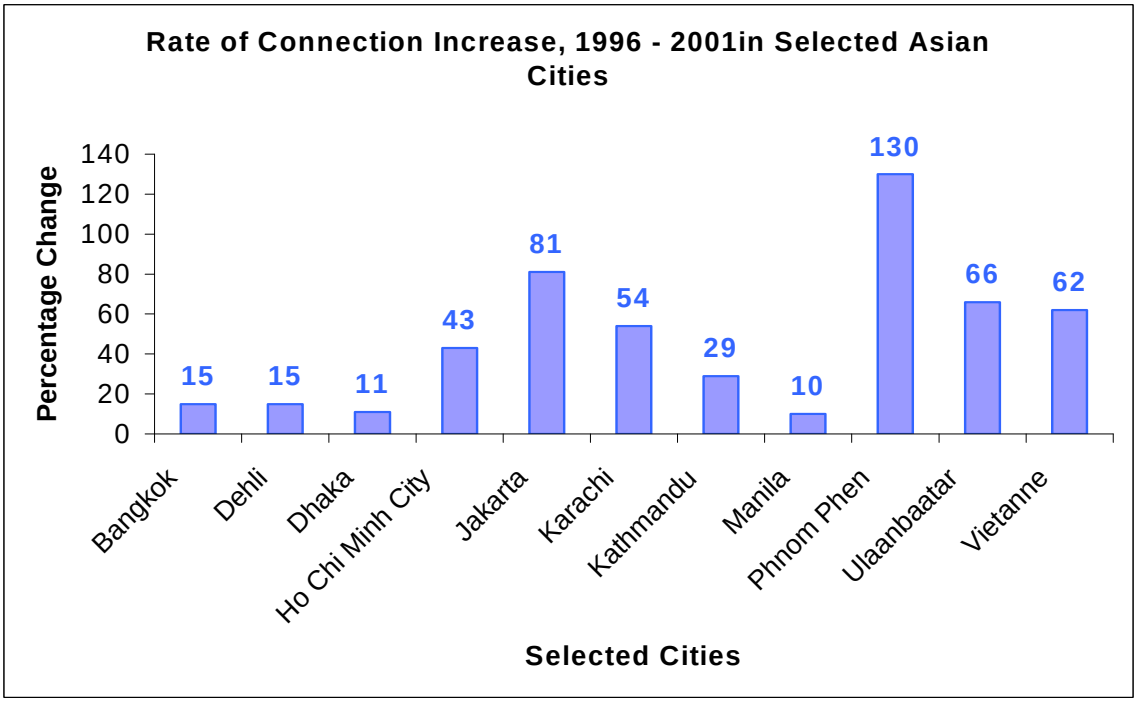

Figure 3.3: Rate of Public Sector Connection Increases 1996 – 2001 in Selected Asian Cities (adapted from McIntosh, 2003)

To the spatial distribution of coverage it is imperative to add temporal distribution. In Kathmandu, there is on average one hour of water per day for the effective coverage area (ibid.). Indian cities average around 2 – 3 hours a day. Figure 3.4 shows the percentage of households in selected Asian cities receiving 24 hour coverage. Intermittent supply has significant impacts on the urban poor, who experience this condition disproportionally. Health is affected by using old water that has stood for a number of days; the economic impact of either ensuring supply from alternative supplies or spending time waiting to collect water when it arrives can be great; and women can be vulnerable if water supply is in the early hours (as is the case in some cities) as they are forced to venture out alone and in the dark.

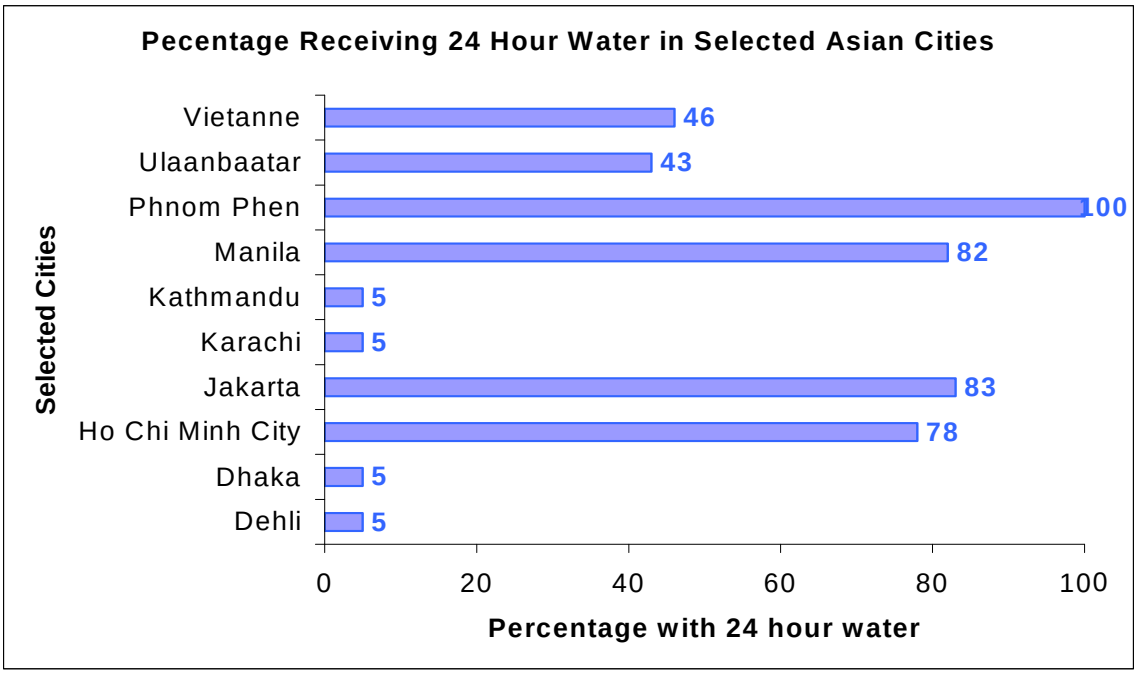

Figure 3.4: Twenty-four Hour Piped Water Coverage in Selected Asian Cities (adapted from McIntosh, 2003)

3.5 The Reasons for Failure of the Public Sector

The failure of the public sector to deliver is specific to the context in which cities are situated. The intricacies of public sector delivery are often generalised in the literature, but this brushes over the interactions of nature, society and capital that produces the varying logics of water distribution at particular places and times (Swyngedouw, 2004). However, it is still possible to draw out some commonalties of experience. It emerges that the public sector failure is tied to the local political ecology, mediated through the relationships of the poor to the city and the city to nature, whilst simultaneously interlinking with a global political economy of international finance and debt flows.

3.5.1 Local Political Ecologies: the contradictions of urban public water provision

A number of themes interlock to produce the political ecology of local water.

Discourses of Water: the scarcity of external water

The dominant paradigm of water politics has been to see it as a natural good of which there is a scarcity that must be considered. Yet as Allan (2005) points out, there is no natural scarcity of water, only the social outcome of the political ecology of water, infused with social, political and financial capital. The natural amount of water just *is*: that Lima is situated in a desert and is short on water, or that the Colorado River no longer reaches the sea are not the outcome of nature 'running out', but of complex and interacting social processes mediated through the production and transfer of water.

However, developing world cities have imported the supply-orientated discourse of the North, aiming to offer water as a collective consumption good available to all. Water is a contested form of socio-nature, yet it has been philosophically and discursively constructed (starting with Kant) as part of external nature. Throughout the history of modernity, capitalism has been an economic and cultural process concerned with the conquest of external nature in the name of progress, with water at the forefront.

Swyngedouw (1999) shows how Franco wanted a new geographical reality of water in Spain to overcome nature; Bassin (1991) looks at how Stalin tried to redirect all the rivers in Siberia to flow north; Gandy (2002) investigates the 'taming' of water in New York City. In all cases, the rhetoric was not to see the urbanisation of water as a process in the creation of socio-nature, but water as a thing in itself that could be objectively sought out in nature and rendered controllable. Scarcity is constructed as a natural phenomenon that can only be overcome through the application of man's technical knowledge (Swyngedouw, 2004).

Cities of the South have not had the financial capital and technological know-how to overcome their 'natural' scarcity. It is power relations of urban society that mediate the distribution of a scarce resource. Postel (2001) maintains the illusion of natural scarcity, arguing that more efficient technologies are required, or that a new 'green revolution' with water as the subject must take place. In Mexico City, city planners are concerned that the water table below the city is reducing so rapidly that the city itself is sinking. A shortage of water has been declared and technological solutions are being sought. In Dhaka, water authorities say there is not enough to go around: yet every year the poor suffer the effects of severe flooding. The ironies of a shortage of urbanised water are nowhere else so explicitly demonstrated.

The reality of scarcity is 'an interaction between available resources, the transformation of nature by human beings and the economics, politics and culture of water use' (Kaika, 2003: 923), but this is submerged between a powerful dialogue that informs the poor that 'there is not enough to go around'. As a result, the myth of external nature is perpetuated, the distribution of water remains uneven and rhetorical barriers to further investment in achieving a more equitable distribution are created. This is, of course, not to say that the quantity of water in a particular area is not important.

Geographical realities

The quantity of water in different cities of the South varies enormously: the size of a river basin, the incidence of precipitation, the level of forestation, the bedrock and local geomorphology all interplay to create a series of unique urban water regimes. Yet some brief generalities can be drawn.[4] Developing world cities tend to sit within the tropics (or not far from them), where climates are more variable, with wet and dry seasons. Water availability has a greater annual variance which affects the ability to urbanise sufficient water. Many cities have grown rapidly to sizes that the local geography can not support: Mexico City, or Lima, a major city in one of the driest parts of the world. In the far northern towns of Siberia, water sources are often frozen for some of the year. In Africa, certain major basins are shared by a huge number of cities in many different countries: the Nile is of course the most dramatic example. Sao Paulo, Brasilia, Guatemala City, Quito and Bogota are all far from major water sources.

The relations of production of colonialisation are important. Most Latin American cities were initially staging posts in the extraction of resources for export to Iberia. The impact of different social systems is also crucial. In Soviet Russia, the ability to mobilise sufficient labour-power enabled cities to be built in the far north, whilst many East Asian cities developed under regimes of 'Oriental Despotism' (Witfogel, 1957) where water usage was controlled under highly authoritative regimes. All were only possible because there was the ability to direct capital and labour (in various forms) and through the State/authority monopoly of the means of violence.

Urban Governance

Urban governance in the South has an impact on the spatio-temporal distribution of water. Increases in urban populations, now predominantly from internal growth, have for some time outpaced physical

growth of the city. New populations are forced to find space in existing slums, to invade pavements in the urban centre or squat at the peri-urban fringe, rapidly extending the spatial and ecological space of the city with vast informal settlements. Often (usually) these are in geographically vulnerable positions: low-lying land in Dhaka, unstable cliff faces in Rio de Janeiro, or toxic land in Lagos. From the first instance, the urban poor are forced to live in ecologically precarious positions threatening health, safety and livelihood.

The ecological marginality of slum land is compounded by a general trend of institutionalised political marginality. It is rare that slum dwellers own the land which they occupy. Land is owned either by municipalities, corporations or private citizens. When squatting on private land, clearances (often violent) are common. On public land, there may be less regular and violent eviction (though this is not to say that it does not happen) but authorities often refuse to recognise the political existence of the inhabitants.

The case of Mumbai, India, illustrates this well. Up to 65% of the population lives in informal settlement. Many live on land owned by BEST, the municipal authority responsible for electricity provision in the city. Despite the slums being in the city for up to fifty years, they have only just been recently politically recognised, and even then only for residents who could prove they were there before 1st January 1995. Previously settlements were considered illegal and as such no services would be extended to the populations within. Extension of water and other services would give the slums a legitimacy that the municipality did not want to give them, and encourage calls for tenure and other rights. The entire governance structure of the city developed to systematically exclude the urban poor: they were illegitimate residents and hence could not register for a vote or for ration cards, preventing them from acting politically to change their circumstances (Burra *et al*, 2003). By politically and legally excluding the poor, the city ensured that it had no legal requirement to provide water. This was not only in the interests of landowners, however: the city did not have the money to pay for connections that it would be required to provide if slums were formalised. The number of connections required and the technological challenge of urbanising water at the peri-urban fringe and the geographically marginal areas of the city was overwhelming.

Mumbai is often replicated in the rest of India and the Global South. The illegitimacy of informal settlements and consequent institutional neglect of water provision has become part of the governance structure of cities. Social relations, capital and ecological realities come together to produce the spatial logic of urban water exclusion.

Subsides and Prices

Many developing world cities have run public water companies operating with structural deficits. The contradiction of poor initial financing, high cost technologies and a demand from socio-political elites for cheap water has seen cities rely on outside financing and State transfers to water authorities in the form of emergency loans. The World Bank showed that most Latin American cities were running water activities at a loss (World Bank, 1992). On average, water is being charged at 35% of the cost of supply by public companies. Tariffs are set low due to economic and social premiums put on urban water: low prices mean low inflation, social stability (for certain classes) and satisfies an industrial demand for large quantities of cheap water. Investment costs are rarely taken into account in pricing, so infrastructure decays: Mexico City loses 35% of its water in leaks (Allan, 2005). This spiral of poor financing means that the city is unable to expand services beyond the current level. The poor end up subsiding water for the rich. Tax revenues used to deliver urban water come from general collections, but are then used as a subsidy to a small minority already connected. The poor tend to pay for water twice: once to the municipality (which they do not always receive) and again for the other sources of water that they use.

In summary, the local political ecology, manifest through governance regimes, the technical and financial challenge of the urbanisation of water and the discourse of water provision have combined to give a general spatial logic of social and ecological exclusion from the city for the urban poor. This then interplays with the

global political economy of capitalism to compound still further this exclusion.

3.5.2 Global Political Economies

The logic of water production and distribution in developing world cities is now tied to the international political economy. In the periods of Fordist production and Keynesian economics, the South attempted to mimic the North providing services to its populations. However, whilst in the north national capital was invested, obtained by taxing national enterprises producing consumer goods, in the South, the lack of indigenous industry forced governments to seek loans for investment on international markets.

In the 1960s and early 1970s, this was a logical action. Interest rates were stable and financial planning secure. With the delinking of the dollar from gold by President Nixon in 1971, the rise in petrodollars in Western banks and overaccumulating Western capital, developing world countries became the spatial fix to overcome the rising crisis in Fordism. The capital on the market was then at lower interest rates than growth rates in the South. Again accepting loans was logical, but with the dollar no longer tied to gold, and other currencies no longer tied to the dollar, money capital had been removed from its value basis. It became open to speculation. In the 1980s interest rates rose dramatically, and Southern countries (starting with Mexico) defaulted on their loans (Harvey, 1982, 1985, 2003).

The crippling effect of debt is well known, as are the impacts of Structural Adjustment and other enforced actions on the debtors (see Stiglitz, 2002). Price controls, foreign exchange goods and import controls were all liberalised and the South was systematically stripped of its wealth. Foreign investment followed as northern production relocated, and surplus value flowed back to the core economies. The IMF and the World Bank, initially despised by the neo-liberal monetarists, were now the tools of international capital (Harvey, 2006). They have been able to force action upon weakened states, described as ‘non-viable nation states’ by de Rivero (2001).

As a result, municipalities today experience significant shortfalls in central government transfers they rely upon due to the State’s need to service debts. Further cycles of deinvestment and infrastructure decline have taken place, mixing the local political ecologies with global political economies to continually reproduce the spatial logic of exclusion from water supply.

3.6 Public Sector Failure and the Political Economy of Water

The political economy and ecology of water in developing world cities has created an uneven spatial and temporal geography of public water coverage. This has produced an urban socio-spatial logic of water production and distribution for the middle and upper classes at the expense of the urban poor. Despite the attempts at various times to match the sort of collective consumption of water as a public service in the developed world, the cities of the South have been unable to mobilise sufficient capital or political will to do so. This is partly due to populations existing under conditions of international capitalism (formal conditions) but not participating in it (the real conditions) (Castells, 1996).

Water is typically seen to have been historically urbanised under four different stages (Hassan, 1998). Up until the mid nineteenth century, water was provided to some (usually richer) parts of cities via private companies aiming to make a profit. In colonial cities, similar companies made provision to the rich colonial settlements. In the latter half of the nineteenth century, a period of municipalisation took place as the rhetoric of sanitary reform took hold. Water and sewage systems were consolidated to provide a standardised supply to the whole city in response to disease and perceived immorality.

The third stage emerged after the First World War. The State took on the role of water provider, tied to the reorganisation of the capitalist social economy into a welfare-orientated logic. Swyngedouw (2004) argues that there were three objectives for this development. First, the creation of jobs; second, the generation of demand for investment goods from the private sector; and third, the provision of basic collective production and consumption goods. It was at this stage that the developing world cities began to fall behind their counterparts in the North. Fordist production in the 1950s, 60s and

70s in the North was characterised as a coalition between capital, government and labour to increase the share of surplus value between all parts of society and establish a mass consumer market. The State became the largest consumer (Amin, 1994), buying housing, healthcare, education and a host of other services, re-enforcing the idea of Castells' that the urban is site of the reproduction of labour. The political aspect of the social relations of capital forced this new relationship between capital and labour.

In the South, relationships were formal because countries and a small consuming elite were integrated into the global economy, but much of the population was not. It existed outside the formal economy and formal structures of political representation (in Latin America) or did not traditionally have any representation (Asia). As predominantly extractive economies, the need to maintain a large labouring class for the (re)production of commodities did not exist. Castells' argument falls down in the South precisely because the urban was/is not a site of the reproduction of labour through mass consumption, but the site of the management of extraction (though still a process in the circulation of capital). In recent times, following the crisis in Fordism, it has become the site of the control of productive capital channelled from Western metropolises – incorporated into Castells' (1996) 'space of flows'. In both cases, water has served as part of the general urbanisation of nature as socio-nature commodities, and the urbanisation of capital through the concentration of water into the cities through the architecture of its transmission. In both cases, the consuming class is small: the logic of investment in public services for managing difficult social relations and stimulating demand does not exist, save to ensure the reproduction of the proportionally small number of people who are required to manage the spaces of capital in the South (civil servants, local managers, local politicians and so on).

The contradiction of public sector supply in the South thus emerges: unlike the counterparts in the North, the populations in the South do not receive public water because ultimately they are a surplus population with regard to the functioning of capitalism. They are needed neither as consumers nor as productive labour – with the exception of relatively small numbers in relatively small numbers of places, for example China, India, South East Asia and Latin America – only as the international reserve army of the unemployed keeping wages of those actually involved in production low.

However, at the same time, the processes of the expansion of capital, the promotion of private property regimes over previously common or public goods (land, water, forests, urban space) leads to rural-urban migration and subsequent informal sector economic expansion. The role of being a nation-state cannot exist in the way that it does in the advanced economies and consequently the developing world State has been left in a contradictory and debilitating condition. Ever dwindling resources need to be harnessed to maintain and reproduce a capitalist labouring class that does not exist in any real form. As a result, the State has failed to deliver not because it will not (though negative human agency is a factor) but because ultimately it cannot: the imperatives of capitalist social relations promoted by human agents and the structural requirements of labour and capital do not exist. All that has been replicated from the North is a veneer of being a nation-state and cultural and philosophical understandings of what such a polity should do (de Rivero, 2001).

The fourth stage that Hassan (1998) identifies is that of the retreat of the State and the emergence of the neo-liberal paradigm. Budgetary restraints following high public spending forced the State to make cuts, which tended to be in those sectors running structural deficits. Increased demand for water, ageing infrastructure, and low prices put enormous pressure on State budgets. The amount of private capital, meanwhile, was rapidly increasing following the de-regulation of global markets. Policy changes were slowly implemented due to pressure of social organisations and their lobbying ability, whilst privatisation of public operations was increasingly being promoted as a solution to the crisis in Fordism. However, the position of states in the South is such that the decision whether to follow this option, and the question as to whether it was needed has

not been solely theirs. Southern cities are facing this challenge now.

At the root of this process of the urbanisation of water as a socio-natural commodity for collective consumption is the question of what role the populations of the South play in the global political economy. Yet, with the majority having and maintaining no real historical role in the capitalist economy (except as a basic commodity resource), the need to incorporate their reproduction has not existed. Instead, they are forced to find water in a daily struggle, simply with the aim of reproducing themselves and their families for the next day's struggle. The methods of finding that water invariably involve the private sector, and are now discussed.

4. THE ROLE OF THE PRIVATE SECTOR(S) IN THE URBANISATION OF WATER

"Nothing is more useful than water; but it will purchase scarce anything; scarce anything can be had in exchange for it. A diamond, on the contrary, has scarce any value in use; but a very great quantity of other goods may frequently be had in exchange for it."

Adam Smith (1776) *The Wealth of Nations*

4.1 Informal and Mobile Private Water Provision to the Urban Poor

The majority of the urban populations already get their water from the private sector. There has been a tendency to look at the connection rates and the structures of formal supply, 'forgetting' that populations survive despite poor records in this sphere because they obtain water from somewhere else. It is further the case that the informal sector's own dynamism has had similarly little attention. Kjellen and McGranahan (2006: 1) talk of the 'rediscovery of water vending'. Most people in most places of the South obtain water from a private supply. The crucial factor is that this is from illegal or semi-legal sources, or is from monopoly, mobile suppliers subsidised by government, and that the water is often more expensive and of lower quality than formal supply. It too has its own socio-spatial logic in producing a particular pattern of socio-nature water consumption. As with the public sector analysis, there is no outright general condition, but some important themes can be drawn.

4.2 Informal Water Coverage

Colligen and Vézina (2000), in a study of 10 African cities, a large proportion of residents obtain water from vendors and other independent sellers (Figure 4.1). Whilst in Dakar, Senegal, just 15% of people obtain water from informal suppliers, in Colonou in Benin, it rises to 73%. In general, African cities show high levels of informal/alternative water supplies for the urban poor. In Guayaquil, Ecuador, over 35% of the population use private vendors for their water supply (Swyngedouw, 2004). In Dehli, India, up to 80% of water is supplied by informal or non-piped services (Llorente and Zerah, 2003).

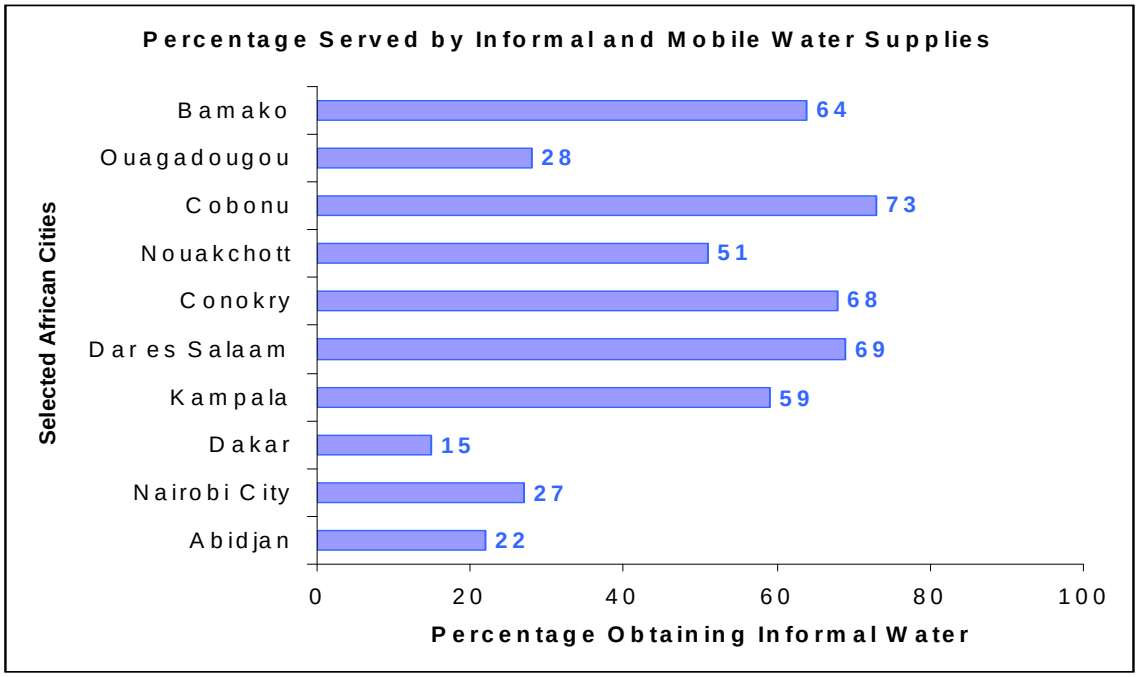

Figure 4.1: Informal and Mobile Water Coverage in Selected African Cities (adapted from Colligen and Vézina 2000)

Tellingly, whilst there are databases and figures showing the levels of potable piped coverage, and showing improved supply, there are not any general databases from the World Bank, UN or other major international bodies that cover the level of informal provision. In some instances there are individual studies, but in reality, whilst the forms of provision are understood and documented, the scale is not. Partly, this is due to the density and inaccessibility of those places receiving informal supply, but it also refers back to the way in which access to water supply has been defined. Many people no doubt are considered to have access despite the fact that this is meaningless: distantly decided definitions of access are not in context with the urban reality, and lead to a conclusion that the level of informal provision is simply not known in any great detail.

4.3 The Productionist Logic of Informal Water Supply

The types of water supply from the informal water sector vary substantially, and with them varies cost and quality of water. Handcarts selling (non-luxury) bottled water, water tankers, standpipes illegally connected to public services, private boreholes and standpipes, water kiosks, and private informal networks have all been recorded as informal water delivery methods of private supply (Colligen and Vézina, 2000). Within each, the relationship between producer and consumer is differentiated. Two things are constant, however. Firstly, the productionist logic of water supply is present in all forms. Private individuals in each case, regardless of quantity and scale of water provision, are concerned with water as an economic good that can be produced and circulated through exchange. The second constant is that the political ecology of water in the informal sector is still infused with power relations – this water is still a flow of power – and within the areas of the city that are provided with water by informal means, sub-urban spatialities of water distribution are present.

4.4 Small-Scale Vendors

Small-scale vending can be a particularly lucrative business, empowering certain individuals in poor, informal and marginalised communities with substantial social and ecological power (Kjellen and McGranahan, 2006). A prime example comes from Ouagadougou, Burkina Faso. There are 500 standpipes in the city, mainly on the peri-urban fringe, which supply water to the urban poor. These are managed by local operators. An individual must deposit 30,000 CFA Franc with the National Water and Sanitation Office

(ONEA), and they may then buy water at CFAF 187/cubic metre. This is sold on at CFAF 300/cubic metres. Daily sales average 30 – 50 cubic metres a day, a highly lucrative enterprise for the assigned operator. Whilst there is a relationship between ONEA and the operator, transparency has been cited as a major concern (*ibid.*).

Mobile vendors using carts are a major source of water in Delhi and other Indian cities. The tight geometries of the slums make it difficult for larger tankers to get through. Similar methods are used in Manila: containers are filled at 1 peso per 16 litre from the concessionaire, and sold at 5 pesos to the poor. For the vendors themselves, an 84 hour week still gives a wage of just half of the official poverty threshold, but concessionaires make large profits, operating under contract from the municipality (McIntosh, 2003).

Individual small-scale vendors, operating in small spatial units and often under some form of semi-formal contract, are not in a position to be particularly profitable. It is difficult for them to make money. Many have made the argument that water vending is an important and positive part of the informal economy (e.g. Kjellen and McGranahan, 2006). Whilst there is some truth in this, in that small scale entrepreneurialship in water vending has stimulated local markets, water is a competitive market, and vendors are forced to develop a range of networks to ensure sales of water. As a livelihood strategy, it is precarious. On the other hand, water vendors in aggregate are rightly part of the problem for the poor. Living in marginal land with low, informal rents has the negative impact of making other land rents – water, electricity and sanitation – more expensive. Local ecological and geographical conditions affect price massively: being on top of a hill as opposed to the bottom, or living far from the source of water has a marked impact on prices (*ibid*.). Water patches are violently protected and localised cartels exist. Markets are assured, and hence the poor are easily exploited for up to 25% of their monthly income by localised vendors that hold ecological and social power. Furthermore, they are concerned still with the production of water, not its distribution (Swyngedouw, 1995). Producing water for effective demand is sufficient for the livelihood strategy of the private vendors, not effective, equitable distribution of water as a right. For this reason they are often criticised as exploitative. In Sudan for example, vendors lobbied against public utility extension. Whilst such action is understandable, it undermines studies that argue that extended public utilities are a universal demand.

4.5 Water Tankers: Local Cartels

Water tankers are generally the most exploitative and costly form of urban water provision. Large tankers, with capacities of up to 80,000 litres fill at subsidised rates from municipal utilities and then resell water to the poor at inflated prices. The scale of tanker delivery requires substantial initial investment, meaning that it takes the form of a legal – but usually unregulated – company. As a result, it is much easier for them to obtain greater prices from the poor. Trucks in Cordoba, Argentina charge water at US$2.50 per cubic metre, compared to public utilities at $0.54 per cubic metre, whilst in Barrangquilla, Columbia it is $6.40 compared to $0.55, and in Lima $2.40 compared to $0.28 (Solo, 2003). Kjellen (2000) and McGranahan and Lloyd Owen (2006) argue that trucks operate generally in middle and upper income areas of the city. Whilst in a handful of cases this may be true, the spatial coverage in most cities of public water, and the demand for cheap water from the educated and politically active classes mean that predominantly, trucks are still a form of delivery to the urban poor as opposed to other groups, and have emerged due to public sector failings (Llorenta and Zerah, 2003).

Kariuki and Acolor (2000) briefly consider Teshie, a poor neighbourhood of Accra, Ghana. Tankers connect to the public utility under licence from the Ghana Water Company Limited (GWCL) and then sell on water at an increased cost to locals, who have tanks in homes filled by the trucks. It is claimed that agreed prices are usually adhered to and displayed, but the reality is that this does not take place. In Accra, each tanker company has its own geographically defined area of operation, within which it is usually the sole provider of water. Under such monopolistic conditions, they can extort a price from the urban poor way beyond any progressive tariff system that may exist elsewhere. The tankers then become the ‘lords of water’

for the locality, able to exact a power regime mediated through the socio-nature of water.

Swyngedouw's (2004) extensive studies of Guayaquil demonstrate the logical extension of water tanker cartels. Tankers here are the main source of potable water to the poor, who have oil drums outside their homes filled by the tankers every other day. The tanker company has an exclusive access to potable water, enabling it to have a quasi-monopoly control over a key commodity. The price at which it buys water from the municipality is subsidised from central taxes, and then it is highly inflated (at least 300 times) before being resold. The *tanqueros* mobilise further power through this control of socio-nature. When the tanker drivers or company want a further concession from the municipal government, they stop leaving the truck compound. After two or three days, the impact on the lives of the poor is so great that they are forced on to the streets to protest. The government then tends to meet demands. As a result, the *tanqueros* operate a semi-legal cartel and control the metabolism of the city. Nothing demonstrates the invaluable need of water so clearly. The implication, of course, is that similarly empowered large-scale private vendors can emerge across all urban spheres.

4.6 The Poor Pay More

Despite it being mainly the poor that receive urban water from vendors and other informal sources, it still represents big business. It is worth $2.5 million per annum in Bamako, in Mali, and $4.5 million in Dakar. In Guayaquil it rises to $14.5 million! In almost all cases, the costs of privately vendored water is greater than that of public water. In Bamako, municipal water costs 55 CFAF per unit, whereas private standpipe water costs 400 CFAF. In Guayaquil, municipal water costs 70 sucres per cubic metre. The water tanker company sells it on at 4,000 – 6,000 sucres per cubic metre, an inflation of up to 30,000% (Swyngedouw, 2004). In Dar Es Salaam, standard connections are 0.27 shillings (Sh) per litre, whereas a neighbour's tap or kiosk is 1.00 Sh per litre, pushcart vendors are between 3.50 and 10.00 Sh per litre. Typically tankers are the most expensive, averaging 6 – 8 Sh per litre (Kjellen, 2000). Figure 4.2 shows the huge increase in costs that private water vendors impact upon the poor in selected South American cities.

City	Average Water Price (US$/m^3)	
	Independent Providers	Utility
Cordoba, Argentina	2.50	0.54
Asuncion, Paraguay	0.40	0.40
Barrangquilla, Colombia	6.4	0.55
Guatemala City, Guatemala	4.50	0.42
Lima, Peru	2.40	0.28
Ica, Peru	0.21	n.a.
Santa Cruz, Bolivia	0.55	n.a.

Figure 4.2: Water prices per unit (adapted from Solo, 2003)

The general pattern is that localised private vendors charge more than public utilities. Yet their market is the urban poor who are usually not connected. Localised political ecologies interact with the city's political and social structures to cause different geographies of water provision. These are uneven, and continually reproduce geographies of water exclusion, and ultimately of socio-nature poverty. The contradictions of urban water supply are further exposed by the dialectics of provision within the poor communities. The urban poor find that the need to combine socially to enact their own agency is contradicted by the reliance of some on water production as their livelihood. The production-distribution contradictions hence find socio-spatial expression at a variety of scales, and makes finding the solution not as simple as some (e.g. Kjellen and McGranahan, 2006) would argue. Under localised private water selling, water remains defined as a socio-natural, capitalist commodity.

4.7 Formal Private Water

The privatisation of public water through various contract forms to international multinational companies is an issue of

major confrontation. When the analysis is taken below the surface, two interesting things emerge. Firstly, the level of private sector participation globally is very low, despite the high profile it has acquired. Secondly, and more fundamentally, the role that formal water privatisation takes within the global and local political ecologies is rarely considered. Scholars tend to focus on connection rates, expansion costs and profits generated. Whilst these are all vital to judge success and the role of private water in the production and distribution of socio-nature, and by extension the expansion of the relations of capitalist accumulation, has as yet received less attention. Yet if viable solutions to the so-called water crisis are to be found, analysing and attacking this process is a necessary long-term strategy.

4.8 The Lords of Water: The Operation of Multinational Water Companies

Petrella (2001) and Swyngedouw (1999; 2004) refer to the major multinational water companies as the 'lords of water'. There are four major water companies in the world, controlling 80% of all Private Sector Participation (PSP) contracts. These are the French companies Vivendi (Ondeo), Suez and SAUR, and Thames Water[5]. The tendency for capital to concentrate spatially and economically is perfectly exhibited when the breakdown of these multinationals is made. Figure 4.3 shows all the water companies in which Suez has a stake: the group had a turnover in 1996 of $5.1 billion, $2.9 billion of which was from overseas concessions and lease contracts (Petrella, 2001). These four water companies have been involved in all major privatisation projects in the world cities (Swyngedouw, 2000).

Company	Country	% of capital held
Aguas Argentinas	Argentina	25.5
Lyonnaise-Australie	Australia	100.0
Sita	Belgium	100.0
Aquinter	Belgium	45.0
Sofege	Belgium	100.0
SS2	Czech Republic	51.0
SMP	Czech Republic	51.0
Lyonnaise (C2)	Czech Republic	100.0
Lyonnaise Chine	China	100.0
Eurowasser	Germany	49.0
Brodrier	Germany	25.0
Aguas de Barcelona	Spain	23.0
Cespa	Spain	100.0
Lyonnaise Pacific	French Overseas Departments	100.0
CEM	Hong Kong	20.0
SAAM	Hong Kong	43.0
Lyonnaise Indonesie	Indonesia	100.0
Crea	Italy	49.0
Sita	Italy	100.0
Lyonnaise-Lituanie	Lithuania	100.0
Lyonnaise-Hongrie	Hungary	100.0
Lyonnaise-Malaisie	Malaysia	100.0
Safege Roumanie	Romania	100.0
Essex and Suffolk	UK	99.0
Lyonnaise UK	UK	80.0
North-East Water	UK	99.0
General Water Works	UK	26.0
Sita Clean	UK	100.0

Figure 4.3: The Globalisation of Suez-Lyonnaise (from Petrella, 2001)

Water is an unprofitable business in which to be involved (Castro *et al*, 2003; Bakker, 1999), particularly in the North. It is notable that only the UK of all the EU-15 countries has direct private water. Germany, Italy, France, Spain and

Belgium are the only other countries that have any private water, and apart from France (at 75%); it represents no more than 25% in any country (Petrella, 2001). There are no private water operations in the USA. The low profitability of water is forces companies to behave in the way that oil companies do and work closely together on joint ventures to ensure a certain level of profitability. Figure 4.4 shows some of the joint venture activities and relationships between the major water companies.

The overall picture is one of a small number of large water and utility conglomerates participating in water provision, mainly in the developing world. Apart from the large British and French markets, water participation options in the OECD countries are limited. Half of all global 'private' cities are in Britain and France, and in total, only 17% of cities in the OECD with over 1 million people have private water operations (Hall *et al* 2005). Private water is a developing world burden, where these major companies and their subsidiaries are the main operators, implementing a range of privatisation measures.

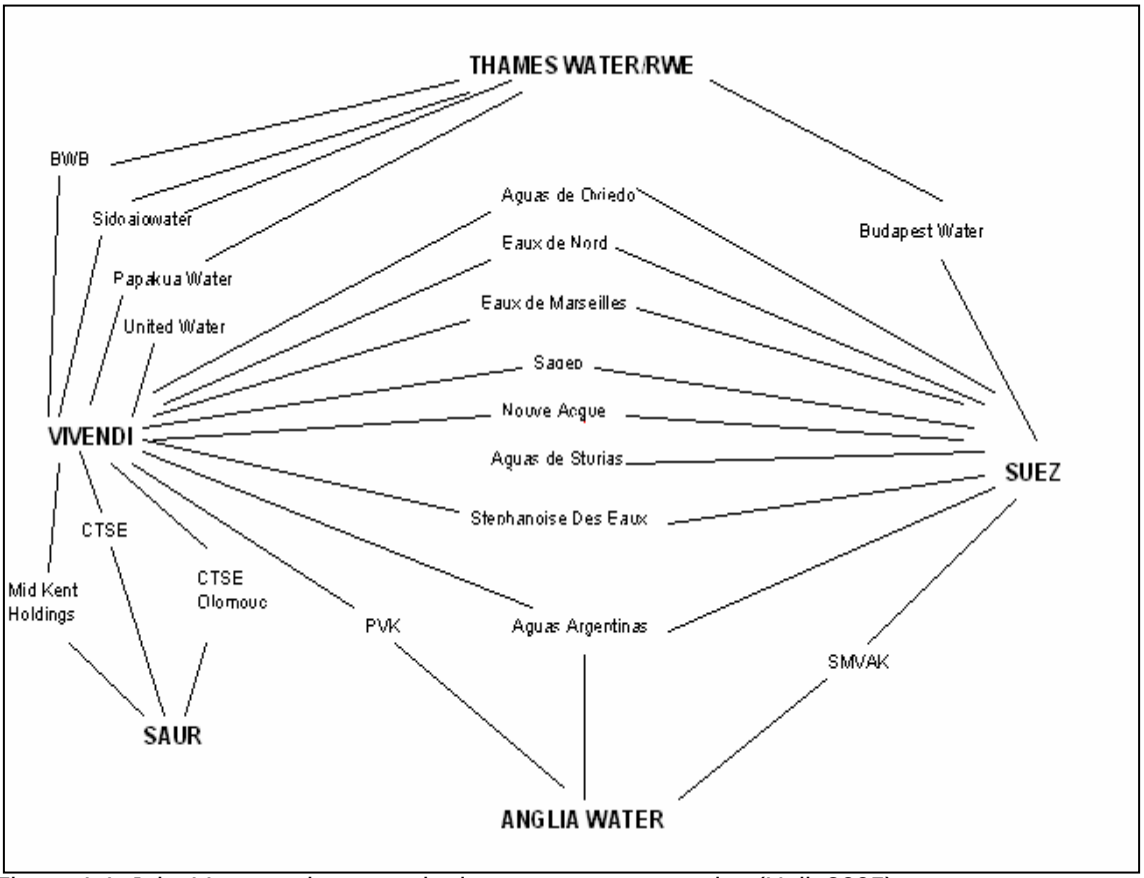

Figure 4.4: Joint Ventures between the largest water companies (Hall, 2005)

4.9 Privatising Water

The term 'privatisation' is widely used in the literature. It covers a range of processes so its meaning is muddled. For the purposes of this dissertation, the definition of Budds and McGranahan (2003: 87) is used:

'"privatisation" refers to processes that increase the participation of formal private enterprises in water and sanitation provision but do not necessarily involve the transfer of assets to the private operator…."private sector participation" [refers] to formal private enterprises operating for or with water utilities.'

Many forms of privatisation are hence seen to take place (Figure 4.5).

Contract	Terms
Service Contracts	These are short-term contracts under which a private operator will take responsibility for a particular, defined task, such as installing metres or collecting bills.
Management Contracts	Under these contracts, certain operations are transferred to private companies but retains investment and expansion responsibilities.
Leases	As with management contracts, but with the added responsibility to the operator for all operational and maintenance functions.
Concessions	*Here, the private operator manages the entire utility and is required to make investments in maintenance and expansion at its own commercial risk. Concessions are long term contracts to allow companies to recuperate investment and profit (large quantities of surplus value are inherent in the fixed capital infrastructure of pipes and treatment plants that is only released over time [Harvey, 1982]). The government acts as the regulator, and will decide on whether concessions are renewed at the end of the contract or if it will take back control. Many infrastructure investments are under the condition of Build-Own-Transfer (BOT) agreements. In other words, at the point at which the surplus value inherent in their production has been released and new investment is required, private sector companies transfer back the unit to the State. The challenge for the private sector is to realise the profit they need and want to in the time period of the contract.*
Divestiture	Here, the entire assets and infrastructure are transferred to private companies, in a full scale State orientated round of accumulation by dispossession. Only in England and Wales has this actually taken place (Petrella, 2001; Budds and McGranahan, 2003).

Figure 4.5: Types of PSP (Budds and McGranahan, 2003)

The range of ways in which private companies participate in water provision is varied and complex. Only concession contracts bring new investment into the system, except with the rare divestiture agreements As with all the aspects already considered, abstracted arguments lose the complexity of local conditions. Some general conclusions can, however, be drawn despite this caveat.

4.10 Private Water Contracts in the South

Only 5% of the world's population is served by formal private water (Budds and McGranahan, 2003). Developing countries where concessions and leases exist tend to be richer and more stable economies. Drawing on the World Bank Private Participation in Infrastructure (PPI) database, Hall and Lobina (2006) have conducted an extensive survey of PSP in the Global South.

4.10.1 PSP in Africa

In Africa, there are only five concessions contracts allowing investment by the private sector partner. These are in Cape Verde, Gabon, Mali and two in South Africa. Lease contracts have been signed in South Africa, Tanzania, Senegal, Niger, Central African Republic (CAR), Cote d'Ivorie, Gambia, and Guinea, and management contracts in Burkina Faso, Chad, Mozambique, Rwanda, Sao Tome and Principe, South Africa and Uganda. Predominantly, these are in specific cities or city-regions, with a range of Multinational Corporations (MNCs). Suez has a particularly high presence in Africa. It has leases in Sutterheim, Queenstown and Nkonkobe in South Africa and management contracts in Johannesburg and Kampala. Saur (until termination) owned a concession in Bamako, Mali and has leases in the cities of Bangui, CAR and Abidjan, Cote d'Ivorie. British company Biwater operates in Nelspruit, South Africa and Dar es Salaam, Tanzania. Veolia, Aguas de Portugal and EdP (also Portuguese) also have various stakes in urban water in Africa.

4.10.2 PSP in Asia

There have been no PSP contracts in South Asia, according to the World Bank PPI database. In East Asia, 15 non-investment contracts operate: six in China, three in Indonesia, five in the Philippines and one in Malaysia. Only in Jakarta and Manila are residential areas covered. Only Thames Water, Suez, Veolia, Biwater and

United Utilities have contracts. There are a number of indigenous contracts that mainly deal with bulk water supply. Distribution contracts are rather limited.

4.10.3 PSP in Latin America

A concession is held by Suez, Vivendi, Anglian and Aguas de Barcelona (Suez controlled) in Buenos Aires. Suez also run a concession in Cordoba, and in La Paz, Bolivia. Further concessions exist in Rio, Santiago, Valparaiso (Chile), Cartagena (Columbia), Guayaquil and Havana. Higher governance regimes – states and regions – also have concessions and other forms of contracts. In general, Latin America, with its less risky and richer economies sees more concessions and less of the management and lease form of PSP that exist in Asia and particularly Africa.

The consolidation and concentration of MNCs is exhibited by the number of local water companies that Suez, Vivendi, SUAR and Thames have a stake in. Suez has a stake in 23 water companies operating various forms of concessions and leases. SAUR, Vivendi, Thames and Anglian share 17 other ventures between them.

What is most striking is the level of MNC involvement, and the murky relationships with which this takes place. The complex contracts and agreements between different water companies for shares in certain state or municipal ventures show in concrete the abstract 'concentration and decentralisation' of capital that Smith (1984) sees as an inherent contradiction in functioning of capital. Smith argues that with the tendency for the rate of profit to fall through competition, capital seeks consolidation of capital through expanded economies of scale in order to stave of inherent crisis in time and space. Large MNCs have bought up stakes in a host of smaller companies across the world as part of the consolidation of capital. Simultaneously, the water companies decentralise operations, internalising competition to create markets and exchange to ensure profitability. Consequently, the absurd situation exists where Suez competes with its own subsidiary, Aguas de Barcelona, for contracts and shares in the Buenos Aires Joint Venture. Water, at the heart of the socio-natural metabolism of capital, concretely also shows explicitly the inherent tendencies for capital to seek consolidation in volatile periods

The distribution of PSP, mainly in the South and predominantly in major urban centres shows how water has an ideological-cultural role in privatisation, as much as there is a technological and economic one. As with public sector failure, private sector investment is tied to the global political economy of capital flows, linked culturally and ideologically to neo-liberal thinking and the legacy of colonialism. Through an investigation of these, what emerges is PSP as a round of accumulation by dispossession in the spatial project of capitalism, manifest as competing national capitals supported by respective States.

4.11 The Political Ecology and Economy of Private Water

Whilst previously the formal and informal water has been separated in analysis, it is vital to see the relationship not as two poles within a 'dual city' (Castells, 1996), but as a multilayered, horizontally and vertically integrated Lefebvrian space of water provision. They are fundamentally linked for both forms respond only to effect demand, seek the transmission of produced, commodified socio-nature to that demand instead of effective distribution, and are tied to the principles of capitalist exchange. In both cases, it is in order to sustain the reproduction of labour power, re-enforcing the ontology of the urban as a process in the circulation or capital and maintenance of capitalist social relations. In both cases, the contradictions of capitalism, between production and consumption, and between capital as class and capital as individuals is constantly reinforced.

4.12 The Ideology of Private Water I: Ejecting Politics

At every major international economic conference since 1980 where water has been discussed, it has been defined not as a right, but as a tradeable commodity (Bakker, 2003). The large multinational water companies are inserted into the global economy, open to speculative investment by capital investors, hedge fund managers and pension funds. Given the rapidity with which shares change ownership on the global financial markets, the true owners of the world's water

cannot ever be known, but through the rise of financial capitalism and a global market local water has been transferred from a spatially certain commodity to another form of capital circulating in global markets. One natural flow (water) becomes part of another social flow (capital) in the global production, circulation and urbanisation of socio-nature.

The consequences of this are severe. Castells (1977) makes it clear that because the urban is the site of consumption for the reproduction of labour, the urban question is a political one (Saunders, 1986). Because the urban is also a process in the circulation of socio-nature, the distribution of that nature is also a political question. However, the positioning of water not as a thing with relations with other things, but as a distinct commodity in itself rhetorically nullifies the politics inherent within it. The 'End of History' discourse argues that there is no politics of production and distribution now, for capitalism has triumphed. Politics is reduced to rights and wrongs and debates over who can do the same thing 'better', whilst distribution is left to the market. Invoking a severe corruption of Adam Smith's (1776) work, a hidden hand[6] has been created discursively as the sole lever of distribution. Yet the fact that water *is* contested across the world, and that the definitions (of water as a commodity) of the Dublin Declaration (1992) amongst others where challenged and fought over is fundamental. At the 2006 World Water Conference, Cuba, Venezuela, Bolivia and Uruguay objected to water being included in international trade agreements. The interaction of power, capital and water combine to produce a rhetoric of efficient, apolitical supply and demand, where production and effective consumption (the 'productionist logic') is desired, and distribution is reduced to a matter of how to get commodified water from the site of production to the site of consumption for exchange.

By defining water as a good which is distributed through coalitions of civil society, state and market, its political nature is denied. But the denial and rejection of politics is only the surface image of neo-liberalism (Harvey, 2005). Beneath this, an active politics is taking place that is concerned with the distribution of water as a commodity, and is in a constant tussle over maximising and expanding accumulation. A powerful political project is aimed at maintaining an illusion that distribution of water is the natural consequence of a natural market that always gets it right, and over which we have no power (*ibid.*).

Small-scale vendors respond to a condition of water as a commodity, charging what price they can in order to generate a profit. The mobility of informal vendors juxtaposed with the costs of investing into new spaces for capital deters MNCs from expanding formal accumulation strategies into spaces of informality. The contradictions of neo-liberalism are thus exposed as promoting the very conditions that challenge the ability of its spatial project to progress. The hidden politics of neo-liberalism emerges at the local scale in the South also, promoting a discourse of small-scale vendors as illegal, endangering lives and exploitative through Structural Adjustment Programme (SAP) accepting governments. The *tanqueros* and local cartels are exactly that, but in many cases informal water is the logical outcome of a policy of state rollback, promoting entrepreneurialism and global uneven development.
Munoz (2005) notes in Argentina, the cities where neo-liberalism has been most aggressively forced are those that experienced similar patterns of urban water provision to Europe and North America and are where most private company operations are taking place. This is not an apolitical process, bringing together the discourses of social scarcity as natural, the informal as illegal, the continued commodification of water and the concept of the market as distributor. These are expressions of social power in uneven relations that are inherently political.

4.13 The Ideology of Private Water II: Donors and the Neo-Liberal Paradigm

The relations of peripheral and core economies has long been a contested terrain, but with the debt crisis and the rise of financial and speculative capital on a global scale, new rounds of accumulation by dispossession have taken place. In order to overcome the debt crisis, developing world economies were told to liberalise economies and privatise public

infrastructure. Only this, argued the IMF and World Bank, would generate the revenues to alleviate the debt problem and bring people out of structural poverty.

The removal of regulatory regimes is the biggest myth that the neo-liberal agenda has created. In reality, SAPs and other measures have served only to replace one mode of regulation with another (Swyngedouw, 2000). The State remains omnipresent and imposes the conditions that guarantee privatisation. It alters power relations mediated through water, transferring control to the global boardrooms and removing localised democratic accountability. The experience of the UK is a prime example, but at least the Government has the resources to establish and enforce independent regulation[7]. In the global, developmental context, this is particularly damaging. This is because the States forcing the neo-liberal agenda are not only facilitating the accumulation by dispossession of their own public assets, but also those of other States by MNCs that have a direct national interest. It also interacts with local factors where transparency is lacking, such as in Casablanca, where King Hassan II forced through privatisation, or in Gdansk, Poland where contracts were kept secret from local officials by national government. The mechanism for doing this is the multilateral agencies and bilateral donors of major developed nations.

Hirst and Thompson (1995) demonstrate that the economic changes with the rise of neo-liberalism do not represent a completely de-territorialised economy with footloose MNCs constantly seeking the best spatio-temporal location for production, but rather sets of competing national capitals mediated through enormous conglomerates. As such, they see it as a new round of internationalisation of the global economy, predicated upon existing flows of capital, labour, ideas and commodities. The change is that instead of expropriating raw material, productive capital is employed locally and surplus value created flows back to the core economies. With the movement of production to the periphery, the core capitalist states do not compete physically (through war) with each other anymore, but do so in their ability to accumulate more localised capital by dispossessing its less powerful owners (Harvey, 2003). Indeed, Harvey (2006) shows through written evidence how Reagan era neo-liberals initially despised the IMF and World Bank as interfering institutions in the market, until they were able to realise them as new regulatory mechanisms in the continued expansion of (American) Capital.

ActionAid (2006), highlights bilateral donors interests from their own literature: 'USAID has always had the twofold purpose of furthering America's foreign policy interests in expanding democracy and free markets while improving the lives of the citizens of the developing world.' AusAID, the Australian Agency states 'Australia's aid program creates jobs and opportunities for Australians [who] deliver over 80% of the aid program…every year AusAID awards Australian firms hundreds of contracts for goods and services.' According to ActionAid, 15% of 'aid' is spent as technical assistance, employing consultants and other service professionals from the donor country. Only 53% actually spent on aid projects: the total spending on technical assistance was estimated at $11.8 million in 2004.

A brief survey of the PSP companies in developing world countries show a strong correlation to former colonial masters. British companies operate in South Africa, Tanzania, South East Asia and China (Hong Kong); French companies dominate West Africa, Vietnam and Cambodia and North Africa; Cape Verde and Brazil have used Portuguese state run companies or Portuguese subsidiaries of Suez; in Latin America, a huge number of contracts have gone to Spanish subsidiaries of the French giants, such as Aguas de Barcelona. As most contracts have come about through externally imposed development projects, the role of the bilateral donors as a branch of the State is key.

Hall and Lobina show a substantial number of examples where the World Bank only lends through International Finance Corporation which itself only invests in the private sector; at the same time, the European Investment Bank (EIB) was set up to finance developments of interest to European countries and companies, and is only able to lend to private European firms. In Latin America, the EIB gave a $38.8m loan for the Prolagos Concession in Brazil to

Portuguese MNC Aguas de Portugal. The World Bank loaned $85m for the Aguacar concession in Argentina to a Suez/Agbar (a Spanish water company) joint venture. Dragados, another Spanish company, was loaned $18m to finance upgrading in Posadas and Garupa, Argentina. This was guaranteed by Spanish bank Caja de Madrid. In all cases, the access to international finance capital for infrastructure development was only made possible through bringing in private companies to which multilateral donors would lend, and as shown here, in many cases to companies with some form of colonial historical links with the recipient state. Bilateral donors have acted the same way.

4.14 Facilitating Accumulation by Dispossession and the Neo-Liberal Agenda: The Case of DFID

The Department for International Development (DFID) is the United Kingdom Government's development agency. DFID is a large spender on water and sanitation, providing 5% of all global aid for this sector (DFID, 2004). When water projects as part of other projects, it amounts to 6% of their annual budget. Figure 4.6 shows funding for water and sanitation between 1998 and 2003.

Year	Water and sanitation spend (£m)	DFID total bilateral aid (£M)	% spent on water
1998/1999	29.8	1161.8	2.6
1999/2000	33.4	1327.5	2.5
2000/2001	34.5	1420.5	2.4
2001/2002	34.0	1529.6	2.2
2002/2003	35.0	1813.4	1.9

Figure 4.6: DFID's spend on water and sanitation, 1998 – 2003 (DFID, 2004)

The institutionalisation of privatisation is acknowledged by DFID itself: 'largely at the prompting of external support agencies, many governments are encouraging other agencies to provide services in certain areas' (DFID, 2001: 18); or alternatively: 'vested interests – including on occasions the donor community itself – continue to favour major infrastructure schemes' (DFID, 2001: 20). The most telling statement is in its aims for future schemes. These are threefold (DFID, 2001: 29):

to put people at the centre of work in water
to respond to demand, rather than be driven by supply
to recognise water as an economic good with an inherent value, and with costs attached to its provision.

The explicit philosophies of neo-liberal thinking are implicit in these statements. Putting people at the centre fits into the entrepreneurial turn in urban management, associated with seeking consensus (of the 'right' sort) and growth through all parties coming together. The second statement relies on the creation of scarcity for capitalist speculation and production. Rather than distributing equitably the ecologically provided water, demand driven policies seek to meet effective demand. Demand policies rely on seeking a technological fix as a teleological outcome of conditions of natural scarcity. Point three defines water as an exchange value, not a use value, which is at the core of the productionist logic. DFID's role is therefore to institutionalise this policy, actively establishing water as a new frontier in the commodification of nature and the production of socio-nature, through accumulation of dispossession.

Water not defined as an economic good[8] *must* therefore be culturally and economically reconstituted. This requires the active project of primitive accumulation, commodification, production and distribution for exchange surplus value flowing back to the shareholders of which ever companies undertake the social metabolism of water at a certain location.

DFID has further accepted the Dublin Principles on Water, established in 1992 (Figure 4.7)

1. Fresh water is a finite and vulnerable resource, essential to sustain life, development and the environment.
2. Water development and management should be based on a participatory approach, involving users, planners and policy-makers at all levels.
3. Women play an essential part in the provision, management and safeguarding of water.
4. Water has an economic value in all its competing uses and should be recognised as an economic good.

Figure 4.7: The Dublin Principles on Water (DFID, 2005)

Dublin took place at the end of the Cold War, the acceleration of the neo-liberal paradigm and the rise of the environmental movement. It explicitly creates scarcity. Fresh water is *not* finite. It has been established that urbanisation is having a dramatic effect on the hydrological cycle, but this is a *social* scarcity, not a natural one. The rhetorical creation of scarcity (DFID's own document is called 'Addressing the Water Crisis') creates the discursive conditions under which it is possible to promote systems that deal with scarcity to solve the problem. From Adam Smith onwards, the market has been seen in bourgeois economics as being the best mechanism for achieving this, and hence core Capitalist states have been able to justify market measures in development for their own ends. This is despite the urban poor having little or no secure water access for decades, when there was no such water crisis.

DFID sees the private sector as a vital part of the response '[the need to] actively encouraged by private institutions' (*ibid*: 35). The International Donor community is asked to support the development of 'appropriate agreements that neither government nor the private sector will come to regret in the future' (*ibid*: 37). To achieve its aims, 'skills available in UK-based institutions…will be used to assist in training, new skills development and capacity-building' (*ibid*: 39). In addition, DFID will help countries shift from supply drive to demand driven cultures (the citizen-user to client-chooser shift[9]), whilst encouraging the growth of the indigenous private sector, and support governments to 'effectively involve the private sector' (*ibid*: 40).

DFID (2005) has since stated that it will cease to impose conditionally. However despite this contracts are still awarded to predominantly British companies so that British capital is recirculated. At least 80% of the contracts awarded by DFID in 2005/06 were awarded to UK firms, and of the remainder the bulk went to firms from OECD countries. UK contract tend to be allocated disproportionately to the 'big five' accountancy firms[10] as well as to free market think tanks like Adam Smith International. The big five received a total of £101 million in contracts from DFID between 2000 and 2005. Adam Smith International received £22 million in 2005 alone, the majority for projects in Iraq and Afghanistan (ActionAid, 2006: 35). ActionAid has shown that France, Germany, Sweden and the US have similar figures. In a parliamentary question to the Secretary of State, it emerged that WS Atkins was employed to conduct a review of conditionally (Hansard, 24th July 2006, Column 1010W).

The use of development projects by DFID as a means of accumulation by dispossession and the furthering of British capital interests mediated through the urbanisation of water is demonstrated through their action in Freetown, Sierra Leone. The Guma Valley Water Company (GVWC) has struggled to provide sufficient water to the city. Privatisation of water has been a condition of assistance. DFID has funded work by the National Commission for Privatisation (NCP) charged with privatising around twenty public authorities: with respect to water it notes the need for 'aggressive implementation of a meter installation program and stricter customer disconnection policies' (in ActionAid, 2006). The conditions for privatisation were aggressively sought. DFID advertised for an 'international consultancy firm' to advise the NCP on privatisation for a £2 million contract. They were charged with 'maintaining momentum in the privatisation programme…catalysing direct and indirect

private sector participation in other sectors…and carrying out a communications and public awareness campaign to give all stakeholders a better understanding of the role of privatisation' (*ibid*.). PwC, Adam Smith International and Maxwell Stamp were all invited to tender for this contract. Money, allocated as aid, is recycled through DFID as part of the State to further specifically British capital in the process of privatising water. NCP, funded by DFID and the World Bank, is now the controlling shareholder in the GVWC and has a mandate to seek privatisation.

4.15 The Private Sector Cannot Deliver Water to the Urban Poor

There is a general tendency for donors to promote national capital and to facilitate the commodification and privatisation of water, and to urbanise it as an economic good with exchange value. The focus of demand driven services has failed to meet the needs of the urban poor, but even those connected are threatened when the motivation for funding projects is to further a distant national interest. Formal privatisation is a mixture of donor ideology and private sector capitalist exploitation, and the capitalist State playing its historical and necessary role of furthering opportunities for capital accumulation. Consequently, it does not prioritise meeting the needs of the urban poor (though there are successes in certain projects), but retains the productionist logic of water provision, concerned with seeking a technological fix to socially produced spatial logics of exclusion. The productionist logic is coherent with the metabolism of water as a commodity from which surplus value can be extracted in exchange, and hence it is aggressively promoted by bilateral donors.

However, in maintaining the productionist logic, and coupled with the neo-liberal paradigm, the ability to give equitable distribution is severely undermined and certainly not a priority. The lack of a large working class living under real conditions of capitalism in the South is further reason for this paucity of provision. The number of people that must be reproduced through the collective consumption of socio-natural commodities is small compared to the general population. Most live under the formal conditions of capitalism, but are not party to it, operating a parallel (yet interacting) economy of informal and semi-formal networks. Private investment from MNCs will not serve them because there is no demand, mirroring public sector failure.

The majority of water contracts are not concessions or divestiture further cements this: management and lease contracts do not bring new investment in infrastructure from the private sector. Hence, not only do municipalities have to pay an external company, they must also generate revenue for expansion. The assumptions that the private sector will have the capacity to collect revenues and so make the water system work more efficiently are not borne up by studies by the critics (WDM) and supporters (the World Bank). Not only are the middle and upper classes more likely not to pay (Biro, 2005), water companies have stated publicly that they cannot deliver what is asked and are retreating rapidly from the urban water sphere. With water being an unprofitable commodity to operate, even in well-regulated contexts like England and Wales investment by companies is low because it affects profitability so much. In the South, where regulatory regimes are actively undermined by the neo-liberal paradigm and weak local governance, investment and other terms of contract are difficult to enforce. The ultimate test must be whether the West practices what it preaches. Categorically, with the exception of England, Wales and France, the answer is no. PSP is rarely used to deliver water in the North for reasons of natural monopoly, low expertise, political climate and low profitability – 80% of the developed world populations receive public water (Hall, 2005). It seems unlikely, then, that it could overcome problems in the South.

Hence, informal vendors have stepped into the breach, but it is also the case that the local informal private sector is not a viable solution. Those scholars that call for the measures to improve the informal/mobile vendors' service only touch the surface of a deeper issue surrounding the production and control of socio-nature, for example Kjellen and McGranahan (2006). Whilst public utilities acting as a service may be able to offer equitable supply and full coverage, private vendors only have a demand orientated logic. Such suggestions fall into the trap of still seeing nature as external to the structures of human life, rather than the

urban as part of the process of socio-natural production. Rather than challenging the notions of scarcity, technology, resource and market that have interacted with culture, ideology and ecology to produce the spatial logic of water exclusion, this view accepts them as real entities that must be reformed but not changed. Consequently, attempts to make the local private sector deliver, despite its obvious small scale livelihood advantages, cannot be the lasting solution to the urbanisation of sufficient water as a socio-natural commodity to meet the physiological and economic needs of the vast urban poor.

With water defined as a commodity globally in meetings and declarations, and locally as a result of the reality of everyday life, both sectors focus on production, and both establish (at scale) monopolies of control over socio-nature. The link between society, nature and capitalism in physical and symbolic means when this is a result of private relationships continually reproduces a socio-spatial logic of inequitable urban water distribution in terms of quantity and quality. Ultimately, the contradictions of neo-liberal thinking are played out between the formal and informal, and the contradictions of capitalism are played out be the need to ensure that labour has enough water to reproduce itself, but the refusal to do it without a profit. Underpinning all of this is the philosophy that nature is external to society, and rather than being synthesised in the urbanisation of water, it is 'conquered' by technological brilliance.

5. CONCLUSION: CHALLENGING THE URBAN WATER CHALLENGE

"In an age when man has forgotten his origins and is blind even to his most essential needs for survival, water along with other resources has become the victim of his indifference."
Rachel Carson ([1962]1998)

Water is inserted into the complex network of urban social power relations through the processes of the urbanisation of capital. Social, cultural, political and ecological powers collide into a fusion that (re)produces the socio-spatial logic of the political ecology of water. The city is fundamentally predicated on the constant social metabolism of nature, turning nature into a social process in the circulation of capital and the relationship between the city, nature and society. The existence of capitalism is predicated on the concentration and centralisation of capital within cities, meaning that water finds its place at the heart of the functioning of capitalism. The diverse relations of production and consumption and the metabolic transformation upon which all these relations are based can be narrowed down to two key things: capital needs cities, and cities need water.

For this reason more than any other, the urbanisation of water *must* be seen not as a thing in itself but as a key process in the establishment and management of capitalism. The benefit of the historical-geographical materialist approach and the priority of process reveals the dialectics of city and water, city and society and society and nature. In their synthesis, layered with the contextual social relations of particular places in particular times, the inequalities of water access and quality in the developing world emerge.

The public sector in developing world cities has failed to deliver potable and regular water supply in the homes of the urban poor. The informal private sector has filled the void, but this has not offered emancipation from struggles over water but an ever greater cementing of the power relations of water provision. The formal private sector has a limited presence in these cities and has served mainly to accelerate the processes of accumulation by dispossession. In all three versions of water supply, water has been presented not as a human right all are entitled to and not as a social good requiring distribution, but as an economic commodity with exchange value collectively consumed. The public and formal sector act to reproduce only that labour directly required by the formal economy whilst the informal sector operates within the dual economy of the informal city, reproducing a labour force that interacts with but is not fully inserted in the formal circulation of capital. In *all* cases, the discourse of natural scarcity of water and the argument that nature is 'out there' to be conquered is promoted: solutions are not considered a matter of reconsidering the social power of some over others, but are established as the need to find communal technological solutions to have power over nature. The combination of local political ecology and

global political economy and human agency acting at scale has led to structural socio-spatial water exclusion of unprecedented proportion. The perverse reality of the urban experience at the beginning of the twentieth-first century is that the poor have never been surrounded by so much good water, and been so thirsty.

5.2 The Urban Water Challenge and the Millennium Development Goals

This dissertation began with an outline of the urban water challenge in the twenty first century. The policy effort that has been created by international bodies is summarised in the MDGs. The specific reference to water states that that by 2015 the world will have aimed to 'reduce by half the proportion of people who are unable to reach, or to afford, safe drinking water'. Water is also at the core of all the other MDGs, for without water access, none of the others can possibly be a success.

Unfortunately, despite the projected need for water, and the obvious failings of all forms of delivery to replicate what is experienced as a *de facto* right in the North, this does not seem a reasonable or attainable goal. These goals are too laden with the ideologies of private water and capitalism. If the world really wanted to do so, it could start eliminating water problems immediately. There would need to be sacrifices and technological investment, but it could be done. However, this measure adds to the increasing concept of crisis and scarcity, with the undertone that only the market and capitalist intervention can overcome. The 'there is no alternative' mantra pervades the MDG concepts, reinforcing the nature-society cleft and asking all people to unite together to overcome nature. Whilst markets may be the most efficient distributors (and this is not only pedagogical but also disputable), the market does not operate to be effective. Effectiveness would not ensure that 20% of Mexico City's water goes into public fountains and other measures, or that the poor in Dhaka will be parched with thirst while polluted water washes across their homes.

The MDGs have justly been heavily criticised for their seemingly ephemeral statements, the failure to clarify what constitutes accomplishment of these goals and the lack of concrete action. But worse of all, they continue the discourse of ejected and ejecting politics in the development and water sphere. Yet they are riddled with politics of particular kind. A new urban politics is needed to challenge this and establish the true urban water challenge.

5.3 Water and the Right to the City

As long campaigners in the North and activists in the South accept the ideology of water promoted by local and national government, international water corporations and factional interests, nothing dramatic can change. If the idea that water is a natural good with natural scarcity, which can only be further distributed through technological investment and market distribution is accepted, then a just distribution will not take place. But if urbanised water is seen as a social-natural process, and its distribution is an outcome of the relationships between global and local actors in the State and market, then change can take place. For this requires not only the criticism of the outcome of the mode of production that commodifies water and distributes according to demand, but criticism of that mode of production itself. A just distribution of water and capitalism cannot lie side by side. Water is at the very centre of the functioning of capitalism, from the body scale up to the global. It is the ultimate mediator of social relations and society-nature relations. It runs through all commodities and relationships. Water is the basis of the city and the city is the basis of capitalist reproduction and organisation. Access to and control over water is the basis of access to and control over the city, and the means of production. Water is tied to the right to the city. Lefebvre (2005) says that it is in everyday life that the possible emerges: grassroots activism and action must build on the urban experience of urbanised water. The new water politics must prioritise use value over exchange value. Only from this, can positive action emerge, and a socially just, equitable distribution is possible. This is the real urban water challenge of the twenty-first century.

BIBLIOGRAPHY

ActionAid (2006) *Real Aid Making Technical Assistance Work* London: ActionAid

Amin, A (1994) *Post Fordism: A Reader Oxford,* Blackwell

Bakker, K (2003) 'Archipelagos and networks: urbanisation and water privatization in the South' *The Geographical Journal* **169 (4)** pp. 328 – 341

— (1999) 'The politics of hydropower: Developing the Mekong' *Political Geography* **18(2)** pp 209 – 232.

Bassin, M. (1999) *Imperial Visions: Nationalist Imagination and Geographical Expansion in the Russian Far East, 1840–1865* Cambridge: Cambridge University Press

Berman, M (1983) *All That is Solid Melts into Air: the Experience of Modernity* London: Verso

Biro, A (2005) 'Water Politics and the Construction of Scale' Presented at the Studies in Political Economy conference, Toronto, Canada (*Transcript Provided)*

Bond, P. (1998) Privatization, Participation and Poorest in the Restructuring of Municipal Services, *Urban Forum* **9(1)** pp 36 – 76.

Budds, J. and McGranahan, G (2003) Are The Debates on Water Privatization Missing the Point? Experiences from Africa, Asia and Latin America, *Environment and Urbanization* **15(2)** pp 87 – 113

Burra, S., Patel, S., and Kerr, T. (2003) Community-designed, built and managed Toilet Blocks in Indian Cities, *Environment and Urbanization* **15(2)** pp 11 – 32

Carson, R ([1962]1998) *Silent Spring* London: Penguin Modern Classics

Castells, M (1977) *The Urban Question: A Marxist Approach* London: Edward Arnold

— (1996) *The Rise of the Network Society* Oxford: Blackwell

Collignon, B and Vézina, M (2000) *Independent Water and Sanitation Providers in African Cities: Full Report of a Ten-Country Study* Washington: UNDP-World Bank Water and Sanitation Program.

De Rivero, O. (2001) *The Myth of Development: The Non-Viable Economies of the Twenty-First Century* London: Zed Books

Devas, N and Korboe, D (2000) City Governance and Poverty: the Case of Kumasi' ,*Environment and Urbanization* **12(1**) pp 123 – 135

DFID (2001) *Addressing the Water Crisis: Healthier and More Productive Lives for Poor People* London: DFID

— (2004) *Water Action Plan: a DFID Policy Paper* London: DFID

— (2005) *Partnerships for Poverty Reduction: Rethinking Conditionality* London: DFID

Gandy, M (1999) The Paris sewers and the rationalization of urban space, *TIBG* **24** pp 23 – 44

Gandy, M (2002) *Concrete and Clay: Reworking Nature in New York City* Cambridge, Massachusetts: MIT Press

Gleick, P (2001) Making Every Drop Count, *Scientific American* **284 (2)** pp 40 – 45

Hall, D (Ed) (2005) *Reclaiming Public Water: Achievements, Struggles and Visions from Around the World* London: Transnational Institute

Hall, D (2005) Urban Water Distribution,, unpublished presentation available on www.psiru.org

Hall, D. and Lobina, E. (2002) *Water Privatisation in Latin America, 2002* London: Public Services International Research Unit

— (2006) *Turning Off the Taps: Donor Conditionality and Water Privatisation in Dar es Salaam, Tanzania* London: ActionAid

Hansard Parliamentary Record 24th July 2006

Harvey, D. (1982) *Limits to Capital* London: Verso

— (1989) *The Urban Experience* Oxford: Basil Blackwell

— (1996) *Justice, Nature and the Geography of Difference,* Oxford: Blackwell

— (2003) *The New Imperialism* Oxford: Blackwell

— (2005) *Brief History of Neoliberalism* Oxford: Oxford University Press

Hassan, J (1998) *A History of Water in Modern England and Wales,* Manchester: Manchester University Press

Hirst, P. and Thompson, G. (1995) *Globalization in Question: The International Economy and the Possibilities of Governance,* Cambridge: Polity Press

Hobsbawn, E. (1994) *The Age of Empire,* London: Abacus

Kaika, M. (2003) Constructing Scarcity and Sensationalising Water Politics *Antipode* **35(5)** pp 919 – 954

Kjellen, M. and McGranahan, G. (2006) Informal Water Vendors and the Urban Poor, *IIED Human Settlements Discussion Paper Series* London: IIED

Lefebvre, H. (1991) *The Production of Space,* Oxford: Basil Blackwell

— ([1970] 2005) *The Urban Revolution* Minneapolis: University of Minnesota Press

Livingstone, D (1992) *The Geographical Tradition* Oxford: Blackwell

— (2002) Race, Space, and Moral Climatology, *Journal of Historical Geography* **28(2)** pp 159 – 180

Llorente, M. and Zeraj, M.H. (2003) The Urban Water Sector: Formal Versus Informal Suppliers in India, *Urban India* **23(1)** (Internet Paper)

Marvin, S. and Laurie N. (1999) An Emerging Logic of Urban Water Management, Cochabamba, Bolivia. *Urban Studies* **36(2)** pp 341-357

Marx, K. (1973) *Grundrisse* London: Penguin

— (1974 [1845]) *The German Ideology* London: Lawrence and Wishart

Marx, K. and Engels, F. ([1848] 2001) *The Communist Manifesto* London: Penguin

McGranahan, G. and Lloyd Owen, D. (2006) Local Water Companies and the Urban Poor, *IIED Human Settlements Discussion Paper Series* London: IIED

McIntosh, A. C. (2003) *Asian Water Supplies: Reaching the Urban Poor* London: Asian Development Bank and International Water Association

Munoz, A. D. (2005) Water Co-operatives in Argentina, in Hall, D (Ed) *Reclaiming Public Water: Achievements, Struggles and Visions from Around the World* London: Transnational Institute

Oldfield, J. D. (2001) Russia, systemic transformation and the concept of sustainable development, *Environmental Politics* **10(3)** pp 94 – 110

Petrella, R. (2001) *The Water Manifesto: Arguments for a World Water Contract* London: Zed Books

Postel S. (1992) *The Last Oasis: Facing Water Scarcity* New York: WW Norton and Co

— (2001) Growing More Food with Less Water, *Scientific American* **284 (2)** pp 46 – 50

Saunders, P. (1986) *Social Theory and the Urban Question* London: Hutchinson

Smith, A ([1776] 1998) *The Wealth Of Nations* Oxford: Oxford University Press

Smith, N (1984) *Uneven Development: Nature, Capital and the Production of Space* Oxford: Blackwell

Solo, T.M. (1999) Small-Scale Entrepreneurs in the Urban Water and Sanitation Market, *Environment and Urbanization,* **11(1)** pp 117 – 132

Stiglitz, J (2002) *Globalisation and its Discontents,* London: Penguin

Swyngedouw, E. (1995) The Contradictions of Urban Water Provision: A Study of Guayaquil, Equador, *Third World Planning Review***17(2)** pp 387 – 405

— (1997) Power, nature, and the city. The conquest of water and the political ecology of urbanization in Guayaquil, Ecuador: 1980-1990. *Environment and Planning A* **29** pp 311 – 322

— (2003) Privatising H2O *Journal Fur Entwidelungspolitik* **XIX (4)** pp 10 – 33

— (2004) *Social Power and the Urbanization of Water: Flows of Power* Oxford: OUP

Swyngedouw, E. and Heynen, N. (2003) Urban Political Ecology, Justice and the Politics of Scale *Antipode* **35 (5)** pp 898 – 918

Swyngedouw, E. and Kaïka, M.(1999) Fetishising the Modern City: The Phantasmagoria of Urban Technological Networks, *International Journal of Urban and Regional Research* **24(1)** pp. 120-138.

— (2000) The Environment of the City ... or the Urbanization of Nature, in G. Bridge & S. Watson (eds) *A Companion to the City* Oxford: Blackwell

Vidal, J (2003) 'Every Third Person Will Be A Slum Dweller Within 30 Years, UN Agency Warns *The Guardian, 4th October 2003*

WHO/UNICEF (2003) *Water For Life*: *Making It Happen* Geneva: WHO

Wittfogel, K (1957) *Oriental Despotism A Comparative Study of Total Power* New Haven: Yale University Press

World Bank (n.d.) 'The World Bank And Water Supply And Sanitation In Latin American And The Carribbean' http://lnweb18.worldbank.org/LAC/LAC.nsf/ECADocByUnid/62CF77BBED2E4E1B85256C7500735009?Opendocument Accessed 14th February 2008

World Development Movement (2006) *Pipe Dreams: The Failure of the Private Sector to Invest in Water Services in Developing Countries* London: World Development Movement

ENDNOTES

[1] The Global South definition used here follows the Brandt Commission.
[2] The MDGs set the development agenda for the world up to 2015. They were agreed in 1999 and aim to address education, HIV Aids and other development issues.
[3] Marx talked of fetishing commodities so that they were seen as a thing in themselves despite the fact that they embodied a social relationship between producer and consumer.
[4] The literature on Eurocentric conceptions of what constitutes a 'tame' and 'wild' climate from scholars such as Livingstone (1992; 2002) is noted.
[5] Currently owned by German utility RWE but for sale
[6] The 'hidden hand' was but a singly used metaphor in a work of 1000 pages that has become synonymous with neo-liberalism. Smith's moral dimension is often ignored.
[7] Some regulation school theorists say that there is actually *more* regulation of water in the 'free market' regime.
[8] Some Andean communities conceive of water in religious terms; in Zimbabwe, water in flow is publicly owned.
[9] Or use value to exchange value conception
[10] Pricewaterhouse Coopers, KPMG, Deloitte, Ernst and Young, and Accenture