Full Circle: Public Goods versus Privatization of Water Supplies in the United States

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Abstract

For much of the eighteenth and early nineteenth centuries, urban Americans acquired water through their own devices, from water merchants, or from public wells. Beginning in the 1830s, many cities and towns developed centralized water systems managed and owned by municipalities. Until the late twentieth century, while water always had been treated as a commodity, it also was generally considered to be a public good and providing it was regarded as a public responsibility. In the 1990s, privatization of the delivery of water to American cities appeared to be a viable option for the first time in many decades, because the financial and administrative burdens of providing the service weighed heavily on municipal authorities. But privatization at this time, did not entail the reemergence of local - or even national--firms, but the incursion of multinational corporations attempting to consolidate control of water supplies and water delivery on a global scale. The notion of water service as a public good was being overtaken by a more singular interest in fresh water as a scarce resource that had increasing value as a commodity, primarily of benefit to those outside the local community.

For much of the eighteenth and early nineteenth centuries, urban Americans acquired water through their own devices, from water merchants, or from public wells (some purchased by the local government). Beginning in the 1830s, many cities and towns developed centralized water systems managed and owned by the municipalities themselves. From that time until the late twentieth century, water was generally treated as a public good and providing it was regarded as a public responsibility, based on the assumption that market forces could not be depended upon to furnish services necessary to society.[1] At the same time, fresh water was a commodity to be bought and sold, whether controlled by private or public entities. Gail Radford suggested the implications of developing public water systems:

Mundane as it might seem, providing water represented a sharp break for cities, which had previously confined themselves to supplying relatively indivisible public goods, such as police and fire protection, that did not lend themselves to the commodity form - that is, to being socially defined as objects bought and sold in markets. Water, by contrast, was generally charged for according to use. In a sense then, water opened Pandora's box. The widespread reliance on municipal provision of this vital substance enhanced the plausibility of following the same course for other goods.[2]

In the 1990s, however, privatization of the delivery of water to American cities appeared to be a viable option for the first time in many decades. How could such a long-standing commitment to a pioneering

municipal service be challenged? And, more generally, what accounted for the change from private to public service and possibly back to private service again?

It may appear simplistic to create a scenario based on changes from private to public and then public to private water supply systems. As Charles Jacobson and Joel Tarr stated about infrastructure and city services, "Although it is widely believed that today's movement toward privatization represents the first major shift from public to private supply of infrastructure, history provides examples of many shifts in both directions." And they added that "a simple distinction" between what is 'public' and what is 'private' does not really "encompass the range of arrangements that has existed with respect to the ownership, financing, and operation of facilities." These might include plans where a government agency (on various levels) builds and operates a facility, contracts out the construction, or contracts out the operation. Funding provisions might rely on user fees, taxes, assessments to abutters, bonds, or a combination of some or all of these.[3]

It should be noted that the focus of this paper is on broad national trends in water supply only; not on all city services. A reasonable argument can be constructed using 'public' and 'private' construed quite generally to identify the biggest and most obvious changes over time. Furthermore, the privatization movement of the 1990s and beyond emerged out of circumstances much different from those in earlier times. Particularly significant has been the globalization of the water industry that has changed the organizational structure of water service in many parts of the world, and presents a challenge to local or regional approaches to water delivery in the United States.

Urban Water Supply before 1830

Prior to the 1830s many American cities faced the threat of fires, and suffered from poor sanitary conditions and the looming prospect of epidemic disease. A plentiful and pure water supply was a valued resource in such a setting. While some of the earliest city-wide water supply systems appeared at this time, few communities could boast of well-developed technologies of sanitation on the order of those constructed several decades later. Much of the responsibility for obtaining water rested in the hands of the individual, who acquired it from wells or nearby watercourses. In low-density areas in particular, these methods proved to be adequate, even efficient, and thus resisted change, obsolescence, or outright replacement. The practices most often were publicly regulated but rarely publicly managed or owned.

As the population grew larger, the number of structures increased, new technologies like the flush toilet (or water closet) came into use, water sources became polluted or infected, and/or local water supplies literally dried up, the traditional methods of acquiring water became less workable. The result - albeit somewhat slowly implemented--was the appearance of water-supply protosystems that placed emphasis on more sophisticated means of acquiring and delivering water than buckets and wells, were increasingly capital-intensive, and were publicly regulated and often publicly operated.[4]

European (especially English) experiences with water-supply systems influenced U.S. cities. Philadelphia became the first to complete a sophisticated waterworks and municipal distribution system in 1801, but it was an anomaly that did not spark an immediate nationwide trend.[5] Prior to the mid-nineteenth century, only about half of the major cities and towns had some type of waterworks and they were overwhelmingly private as Figure 1 shows.[6]

Year	# Works	# Cities	Cities with Works	Public	Private
1800	17	33	51%	1	16
1810	27	46	59%	5	22
1820	31	61	51%	5	26
1830	45	90	50%	9	36

Figure 1: American Cities with Waterworks, 1800-1830. Cities = 2,500 or more population. Source: U.S. Bureau of Census, Census of Population: 1960 vol. 1, Characteristics of the Population (Washington, D.C.: Department of Commerce, 1961), Part A, pp. 1-14, 1-15, Table 8; Earle Lytton Waterman, Elements of Water Supply Engineering (New York: John Wiley and Sons, 1934), 6.

The Rise of the Public Water Utility, 1830-1920

Beginning in the 1830s, the scale of urban growth in the United States, the persistent fear of fire, increasing demand for water, and vague notions connecting waste with sickness led to the construction of several city-wide water supply systems. As Charles Jacobson stated, "[W]aterworks represented a critical element in a distinctively growth-oriented American style of city-building, elements of which have survived to the present day."[7] American cities were undergoing their first "sanitary awakening" between 1830 and 1880, a time when prevailing public health ideas blamed disease transmission on "miasmas," that is, decaying matter, foul smells, and bad air. Sanitarians, engineers, and city officials linked the new water systems to the goals of environmental sanitation, simply utilizing sensory tests of purity to seek out what they believed to be safe sources of water and to protect supplies from human and animal wastes. This strategy was crude and scientifically inaccurate - bacteria, not filth transmitted disease - but waste removal and concern for water purity nonetheless had a salutary impact on making the delivery of water a high priority. It also placed responsibility for public improvement in human hands. The number of waterworks multiplied at an accelerated rate from 45 in 1830 to 9,850 in 1924.[8]

Leaders especially in large cities concluded that control of the sanitary quality of its water service would be difficult if the supply remained in private hands. They also increasingly came to believe that a public water supply could be profitable for city government, and would keep a valuable resource from being controlled by businessmen. While many water companies had been profitable, capital investment in the modern systems escalated, and operating costs rose.[9] In addition, many private companies were accused of being inefficient or charging excessive rates. In essence, the push for municipal ownership had as much to do with the desire to influence the growth of cities as to settle disputes with private companies over specific deficiencies.[10] Thus, private owners increasingly were under pressure to sell their assets as several communities gradually phased out private service. Major cities tended to support public systems earlier and more uniformly than any other class of cities. They also tended to invest more heavily in water supply and distribution than had the privately owned companies. Whereas in 1830 only 50 percent of cities had public systems, in 1897 41 of the 50 largest cities (or 82 percent) had public systems; in 1924 70 percent of all cities went public. As Figure 2 shows, the most dramatic increase in public ownership occurred in the mid-1890s, during the Progressive Era, when promotion of government action in several spheres intensified.[11]

Year	# Works	Public	Private	% Public	% Private
1830	45	9	36	20	80
1840	65	23	42	35.4	64.6
1850	84	33	51	39.3	60.7
1860	137	57	80	41.7	58.3
1870	244	116	128	47.5	52.5
1880	599	293	306	48.9	51.1
1890	1879	806	1073	42.9	57.1
1896	3197*	1690	1490	52.9	46.6
1924	9850	6900	2950	70	30

*Figure 2: Public v. Private Ownership of Waterworks, 1830-1924. *Includes 17 undocumented systems. Source: Waterman, Elements of Water-Supply Engineering, 6.*

The desire of city leaders to convert private systems into public, or to build new public systems, rested on more than the will to do so. The central issue was the ability of cities to incur debt to fund major projects and to sustain the high costs of operation. As the nineteenth century unfolded, city finances underwent changes in scope and complexity that ultimately made the development of public water supply systems possible.[12] The urban bureaucracy itself experienced substantial change, making it more responsive to developing city-wide sanitary services. Professional bureaucrats became firmly entrenched in municipal government, and helped shift power away from state capitols to city halls. Beginning slowly in the 1870s, several cities made efforts to move away from state interference in their affairs by demanding more "home rule." The movement took many forms, including efforts to increase the appointive power of mayors and to gain control of various service departments.[13]

"Home rule" - granted by legislatures or constitutions--proved viable in several states with large cities. In some cases, the cities demonstrated political clout which they could wield at the state level. In Colorado, Denver was granted some home rule powers in 1889, but this action was essentially a rubber stamp for powers the city had already accrued. When a new political party entered office, Denver temporarily faced the institution of state boards which cut into its local authority. In a quite different case, Louisiana granted statutory home rule to all cities in the state in 1896, except New Orleans. In some states with small cities, or where public service standards were high, legislatures often retained the right of special legislation, but wielded it carefully. By the end of the nineteenth century, the success of reform efforts in the cities and states made for a conducive political setting for greater home rule. More home rule did not insure political and financial stability for cities, but it did allow some latitude in setting local priorities, or at least in responding to perceived local needs.[14]

By the late nineteenth century, faith in environmental sanitation as the primary weapon against disease lost followers as the "germ theory" of disease replaced the "filth theory".[15] Bacteriology placed more emphasis on finding cures for disease as opposed to prevention, which had been the mainstay of sanitary reform since the 1840s. The commitment to develop elaborate urban infrastructure for water services was not deterred by the changing notions of health and disease, since the need for pure and plentiful water was essential to city life. The technology of insuring the quality of the water supply changed, however, with more emphasis on chemically testing, treating, and filtering water. By 1920 many American cities could

boast about plentiful sources of pure water, and about water systems that took greater account of how to confront water-borne epidemics.[16]

In the era of bacteriology, water supplies increasingly relied upon centralized organizational structures and capital-intensive technical innovations which had been developing since the 1830s. The prevailing goal in the late-nineteenth and early-twentieth centuries was to transform the evolving systems into more comprehensive public, city-wide systems that afforded permanent solutions to the delivery of water. The price of public-water infrastructure was high, but many officials and citizens came to believe it was worth the expense.[17]

Metering water usage became a powerful management tool in administering the water supply in public systems. Ostensibly employed as a way to set rates, the use of water meters was equally important as a means to check waste and to anticipate future expansions of the system. By 1920, metering had made notable strides. While only about 30 percent of the cities metered at the pump, more than 600 of 1,000 cities surveyed metered at the tap; 279 cities metered all taps.[18]

Expansion of Water Supply Systems, 1920-1945

From the end of World War I to the end of World War II, neither the quality nor character of water-supply services underwent substantial change. The challenge for municipal officials, engineers, planners, and sanitarians was to adapt those services to urban growth increasingly characterized by metropolitization and suburbanization, on the one hand, and demand in numerous small towns and rural communities, on the other. Decision making in this period was complicated by two major disruptions to American life: the Great Depression and World War II. Despite the fluctuations of the economy from the 1920s to the 1940s, national trends in the construction and expansion of waterworks continued to indicate steady growth. Many of the new systems were rudimentary ones in numerous small communities. In 1940, there were approximately 14,500 waterworks in the United States.[19] Although the rate of growth was strongest from the 1890s through the early 1920s, increases in the 1930s were significant due to the infusion of federal funds during the New Deal.[20]

The relative stability of the waterworks business in the interwar years occurred with some significant changes in the management of the water supply systems. The need for greater cooperation between political entities in the acquisition and delivery of water was becoming obvious, especially in response to metropolitan and suburban growth patterns in major cities. In some parts of the country, special water districts sprouted up in the 1920s, especially for the development and delivery of water.[21]

Without question, the greatest change in the development, extension, and financing of water supply systems in the interwar years came with the new role of the federal government. Management, however, most often remained in the hands of local - or regional--public authorities.[22] During the New Deal, the Public Works Administration financed between 2,400 and 2,600 water projects with a price tag of approximately $312 million--half of the total expenditures for waterworks for all levels of government. The Federal Emergency Relief Administration, the Civil Works Administration, and the Works Progress Administration spent another $112 million for work relief on municipal water projects. Smaller communities realized the greatest impact of these funds; for the first time they were able to finance public systems, treatment facilities, and distribution networks. In fact, almost 3/4 of the projects financed went to communities with less than 1,000 people. While federal support stimulated development of new

waterworks and provided resources for improving others, wartime priorities ultimately shifted federal funds away from local sanitary services.[23]

Metropolitan Expansion and New Demands on Water Supplies, 1945-1970

Relentless growth on the periphery and deterioration of the central city characterized post-World War II urban conditions, and placed increasingly stiff demands on the providers of water supply. Concern over decaying infrastructure, most especially at the urban core, raised important questions about the permanence of the sanitary systems devised and implemented in the nineteenth and early-twentieth centuries. However, an array of mounting social ills--characterized as an "urban crisis"--increasingly shifted attention away from physical problems. The last of a series of Fortune articles on infrastructure (December, 1958) stated flatly that water supply and sewerage "remain a signal failure in public works."[24] This assessment was harsh, but many older water supply and sewerage systems were in decline by the mid-1940s. The Committee on Public Information for the American Water Works Association reported in 1960 that of the approximately 18,000 functioning water facilities in the U. S., one in five had a deficient supply, two in five had inadequate transmission capacity, one in three had defective pumping, and two in five had weaknesses in its treating capacity.[25]

Decisions about improving water supply systems had to be made within a framework of rapid urban growth, increasing water usage, and growing financial pressures on cities. Further concentration of industry in metropolitan and unincorporated areas also increased the need for more water, as did demands for service in unincorporated residential communities.[26]

New waterworks continued to come on line, especially in the expanding metropolitan periphery and in smaller cities and towns no longer able to depend on private wells and rudimentary water systems. In 1945 there were approximately 15,400 waterworks in the United States supplying about 12 billion gallons per day to 94 million people. By 1965, there were more than 20,000 waterworks supplying 20 billion gallons per day to approximately 160 million people. By the mid-1960s, 83.4 percent of water-supply facilities (in cities with 25,000 or more population) were publicly owned. Between 1956 and 1965, $10 billion was spent for new construction and additions in the United States. The annual value of the water placed waterworks within the nation's top ten largest industries.[27]

Distribution problems resulted from the location of water facilities in central cities, which often serviced the larger metropolitan areas and outlying suburban communities. It was frequently in the interest of the central city to extend water lines to the suburbs to maintain a healthy economic climate in the metropolitan area. For suburbs, growth was impossible without adequate services. In some cases there was reluctance on the part of core cities to extend distribution lines outward, if there was no guarantee of future annexation. Often, real estate developers or alternative public entities constructed pipelines beyond the existing city limits to make outlying suburbs attractive to future annexation. In the 1960s the central plant in Chicago supplied water on a contract basis to approximately 60 suburban communities. The number of special districts and other administrative arrangements were increasing in number in response to the need for water. From the vantage point of the total water system, the cost of distribution represented as much as 2/3 of a utility's investment.[28]

For water-supply systems and other city services, the postwar economic boom and the dynamic expansion of metropolitan America obscured the chronic deterioration of the infrastructure and the

inability of cities to keep pace with sanitary needs. Water supply systems were failing to live up to expectations and foretold an unsettling fear of a new era of adversity.

From Infrastructure Crisis to Privatization, 1970-2004

In the wake of the so-called "infrastructure crisis" in the late twentieth century, water supply systems avoided the direst predictions about decay and deterioration. A 1987 report stated that a national water supply "infrastructure gap" of the magnitude that would require a substantial federal subsidy did not exist. Urban water supply systems as a whole, it concluded, "do not constitute a national problem".[29] This assessment was based on comparisons with other components of the nation's infrastructure. Water needs appeared modest when compared with highway repair and replacement estimated in the mid-1980s to reach a 20-year "needs level" of approximately $2 trillion. Studies set price tags of $125 billion for water-supply repairs, expansions, and improvements. The relatively small, but hardly insignificant, number masked problems that had been building for years. Some experts, looking beyond the statistics, charged that many drinking water systems were outdated, faced massive leaks, were poorly maintained, and relied on pipes 100 or more years old.[30]

Broadening federal regulatory authority over water pollution and the tightening of water quality standards were first steps in recognizing the severity and complex nature of water pollution in the 1970s, but added additional financial pressures to managing water systems at the local and regional level.[31] Financing of water supply in the 1970s and 1980s largely remained at the local level. Statistics from the early 1980s indicate that state and local governments were primarily responsible for 83 percent of the expenditures for municipal water supplies. Federal funds for water projects were on the decline in the 1970s, and capital spending by all governments for water resources had fallen by 60 percent from the late 1960s to the late 1980s.[32]

Regionalization of the water industry in the United States attracted considerable attention, especially the Metropolitan Water District in California and the Metropolitan Sanitary District of Greater Chicago.[33] Moreover, efforts by several multinational companies to privatize water-supply delivery and treatment globally were gaining significant attention in the 1990s. American waterworks remained largely public ventures managed on the local level by the first decade of the twenty-first century, but privatization was a trend to reckon with.[34]

In recent years, various observers have come to believe that fresh water will be the most contested commodity of the twenty-first century like oil had been in the twentieth.[35] Deep concern about this turn of events on a world scale grew out of several converging issues:

First, some have raised the specter of a "fresh water crisis," in much the same way as an "energy crisis" was proclaimed in the 1970s. In an article published in 2000, social ethics professor John M. Swomley predicted that a water crisis "looming on the horizon" could reach "dire proportions within the next ten to thirty years." It is unclear, however, on what basis he made such a presumption (or if he has the expertise to do so).[36] An article in a 2002 issue of Nation also sounded an alarm:

The world is running out of fresh water. Humanity is polluting, diverting and depleting the wellspring of life at a starling rate. With every passing day, our demand for fresh water outpaces its availability and thousands more people are put at risk. Already, the social, political and economic impacts of water scarcity are rapidly becoming a destabilizing force, with water-related conflicts springing up around the globe.

Quite simply, unless we dramatically change our ways, between one-half and two-thirds of humanity will be living with severe freshwater shortages within the next quarter-century.[37]

Second, beyond the issue of scarcity there was growing unease that fresh water was being commodified, that is, being treated more as an economic as opposed to a social and environmental good.[38] From this vantage point, water is not just another commodity or consumer product, but—as one writer noted—it is "a shared resource and a public trust." A United Nations' committee asserted that access to safe and affordable water must be a human right.[39] Others echoed the notion that commodifying fresh water was ethically wrong. On a practical level, treating water simply as a product leads to choosing the most profitable markets for providing water service, leaving some areas - especially poor communities and those located on the urban margins--without adequate service.[40] Such concerns, although raising legitimate questions about equity, failed to take account that water historically has been treated as a product as well as a public good, and that the actions of multinational water companies did not initiate the commodification of water.

Third, people especially in industrialized nations, have come to expect water delivered efficiently and at low cost. However, local governments and regional authorities often face budgetary hardships - including reduced federal funding--and the increased cost of compliance with environmental regulations to the extent that many historically profitable water supply systems are difficult to maintain in the pubic arena.[41] Local leaders frequently must choose between maintaining services "in-house" that also may have political benefits versus substantial government spending that may have political costs. Given the predicament of many local authorities, private companies are increasingly pursuing occasions to manage or to own local waterworks.[42]

In the United States "privatization" most often means governments contracting with private companies to provide specific public services. For example, a public-private partnership was established between Harrington Park, New Jersey, and United Water Resources through which the city maintained ownership of the water utility, while the company managed the facilities. Selling off assets or complete liquidation of public holdings also is possible in some instances.[43] From a business perspective, water supply systems often represent a "hot investment." Johan Bastin, with the European Bank for Reconstruction and Development in London, was reported as saying: "Water is the last infrastructure frontier for private investors."[44] Thus, the most recent efforts of private water companies to penetrate the American market does not signal commodification of water per se, but rising expectations about new economic opportunities.

Fourth, critics are sceptical of claims that privatizing water supplies could revitalize the systems, make them more efficient, and deliver the product at a reasonable cost once a city's rate-setting ability is shifted to a private company. They also are concerned as to whether the private market can deal with issues related to the public good in addition to focusing on profits-- most likely to be taken out of the community. And they are particularly wary of multinational companies with no local ties that are most often the driving force behind recent efforts at privatization of water-supply systems.[45] As Maria Alicia Gaura stated in a 2002 edition of the San Francisco Chronicle, "The transformation of water delivery from prosaic necessity to hot investment trend has startled many U.S. ratepayers, who never dreamed that stockholders in Europe would be wringing profits from their water bills".[46]

Globalization of fresh-water service adds a significant layer of apprehension to the privatization trend in government. The rising influence of international water companies and their pursuit of local opportunities

around the world take us not only "full circle" from individual and private water supplies before 1830, to public utilities established by the late-nineteenth century, and back again to private providers, but into a new era entirely. Where public-private competition over water supply, waterworks, and treatment plants has been largely a local matter in the past, the potential impact of multinational - or transnational - water companies controlling vast numbers of systems represents a unique situation. Control over water supplies and water delivery is not a change from water as a public service to water as a commodity, but a fundamental erosion of local authority well beyond more traditional tensions between city and region, city and state, and the city and the federal government.

At the turn of the new century, privatization of water systems is much more widespread in Europe than in the United States. In 2003 only five percent of the water systems in the U.S. were privately owned, and only about 15 percent of the population was served by corporate water. Of the 94 percent of water systems that are publicly controlled (about 5,000), most are municipal.[47] Between 1997 and 2003, however, the number of publicly owned systems operated under long-term contracts by private companies has increased from 400 to 1,100.[48] The Centre for Public Integrity--a non-profit advocacy group based in Washington D.C. - estimated that before 2020, 65 to 75 percent of public waterworks in Europe and North America would be controlled by private companies, with Africa and Asia not far behind.[49]

Leading the way to this potential sea change are ten major corporations[50], several subsidiaries, and some smaller companies delivering water and wastewater services. The prospect of a long-term contract to monopolize a key resource has attracted substantial corporate attention. For their part, the World Bank and the International Monetary Fund provide backing to many of the larger ventures, especially in developing countries. Representatives of the World Bank have argued that governments in developing countries are too poor and too much in debt to subsidize water and sanitation services with public funds. International trade accords--such as the North American Free Trade Agreement - also incorporate provisions for governments to turn over control of fresh water supplies to global trade institutions, helping private companies gain access to those supplies. The bottled-water industry (Culligan, for example, is owned by Veolia) also must be included among water-for-profit enterprises, selling more than 90 billion litres of bottled water in 2002 alone. One report has noted that the annual profits of the water industry in recent years surpasses those in the pharmaceutical sector and is about 40 percent of the oil sector, although only about five percent of world's water is privately owned.

Two French companies dominate the international water industry, Veolia Environment and Suez.[51] Veolia, formerly Vivendi Environment, grew out of Generale des Eaux, which had been established by Napoleon III in 1852. Its first contract called for supplying water to the city of Lyons. Suez purchased Lyonnaise des Eaux, which was founded in 1880 with the sponsorship of the bank, Credit Lyonnais. Both Generale des Eaux and Lyonnaise des Eaux established the tradition of private water delivery in France and benefited from years of protectionism, and now have emerged as part of a powerful force on the world scene. Taken together, the two water giants - Veolia and Suez--provide service in more than 100 countries with approximately 200 million customers. Only RWE/Thames comes close to them, benefiting from Margaret Thatcher's privatization of water in Great Britain in 1989. In many cases, low margins in the European water market have encouraged the multinationals to spread their financial risk into other parts of the world.[52]

Some American-based corporations have attempted to challenge Veolia and Suez - most notably Azurix, which was a subsidiary of the now much maligned energy-trading company Enron. Enron had hoped to

be a major player in the fresh water market on a scale equal to its core businesses in natural gas and electricity. It met with little success, however, because it could not raise sufficient capital to operate effectively in both the water and energy markets.[53] In 1999, American Water Works Company was the leading water company in the United States serving 16 million customers in 29 states, but its revenue was less than 10 percent of Veolia's. German conglomerate RWE AG purchased American Water Works for $8.6 billion, which has further taken American water companies outside the leadership of the industry. Through its ownership of U.S. Filter, Veolia is the largest private wastewater firm operating in the United States.[54]

The water giants have not been without their failures as well as successes. Allegations of corruption and unfair business practices regularly dog them. Ventures in developing companies generally have been less successful than elsewhere. In 1998, Bolivian authorities - under pressure from the World Bank--gave a contract for water service in the city of Cochabamba to a consortium of private investors (English, Italian, Spanish, America, and Bolivian), who promptly raised water rates by 35 percent. Water now cost more than food. In 2000 a general strike and transportation stoppage ensued. Despite mass arrests and several deaths, the protesters continued to demand "deprivatization" of water, and ultimately the consortium abandoned the project and the government revoked the privatization legislation. In neighbouring Rio de Janeiro, an effort to auction off the state's water system was cancelled by the Federal Supreme Court because of a clash between city and state authorities over ownership of the assets. In Argentina, government officials terminated a contract granted to the city of Tucuman after water rates doubled and water quality worsened.[55]

In the wake of difficulties in developing countries Suez has retrenched, especially in Asia and Latin America, while Veolia proved more successful focusing on Eastern Europe and North America. The China market appears promising, but has yet to be effectively penetrated. And little attention is given to places such as sub-Saharan Africa where the need for water is great, but where the business of water seems less profitable.[56]

A wholesale trend toward privatization of water supplies and water supplies management has yet to occur in the United States. However, in 1999 alone there were $15 billion in acquisitions in the U.S. water industry. For example, Suez purchased Nalco Chemical Company of Illinois - a water treatment group - for $4.1 billion, and also acquired Calgon Corporation - the third largest water-conditioning company which is based in Pittsburgh - for $425 million. The 1996 Safe Drinking Water Act and other federal and state laws requiring renovation or improvement of deteriorating water systems place a financial burden on several cities, which are now ready to explore a relationship with a private water company. Also, a 1997 executive order, tax-rule changes by the Internal Revenue Service, and privatization advocates in Congress have opened up the possibility of more shifts from public to private service. Cities such as Indianapolis, Milwaukee, and Gary, Indiana, have contracted with private companies to manage their waterworks.[57]

In the United States as elsewhere the global water company juggernaut has not always prevailed. Atlanta officials struck a 20-year operations and maintenance contract with United Water, Inc. (a subsidiary of Suez) in 1998 which paid the company $21.4 million per year. What had been one of the first large privatization awards in the U.S., however, was terminated in 2003, ostensibly because of faulty contract provisions, but also because of poor service and the protest (and lawsuits) of environmentalists over the construction of suburban reservoirs. As one journalist noted, "The decision, in many ways, takes Atlanta back to square one".[58] While the action was a setback for privatization of water, and cities such as New

Orleans and Stockton, California, were rethinking plans to privatize (or to further privatize in the case of New Orleans), Atlanta's decision was not likely to have long-range implications for water privatization in the United States. New Orleans, for example, took up privatization of water in early 2003 after an October, 2002 plan died in.[59]

Conclusion

Many environmental activists have encouraged the public to "Think globally, act locally." Multinational water companies have taken up that call, but for much different ends. The historical record about urban water service in the United States has long been viewed from the vantage point of the triumph of public control over private action - a model in many cases unique in the world. A deeper look at that record suggests that a wholesale shift from private means of water delivery to public means is a little too simplistic, since historians are most comfortable demonstrating the shades of gray that makes up much of our lives. Nonetheless, for a very long time municipal control or oversight of water service has been part of the local fabric of cities - a venture that set precedents for many other services to follow. The new century may have something different in store for municipal water supplies and delivery as fresh water becomes an increasingly scarce resource and a more profitable commodity. The line between water as a public good and water as a product always has been blurred, but never to the extent it is today.

Notes and References

I would like to thank Tom McKinney for research on privatization that he completed for the last section of the essay.

[1] See Charles D. Jacobsen, Ties That Bind: Economic and Political Dilemmas of Urban Utility Networks, 1800-1990 (Pittsburgh: University of Pittsburgh Press, 2000), 3, 13, 22.

[2] Gail Radford, "From Municipal Socialism to Public Authorities: Institutional Factors in the Shaping of American Public Enterprise," Journal of American History 90 (December, 2003): 872.

[3] Charles D. Jacobson and Joel A. Tarr, Public or Private? Some Notes from the History of Infrastructure: A Report to the World Bank (Unpublished manuscript,1996), 2.

[4] "Protosystem" connotes an original system or "first in rank or time" as opposed to a primitive system. For a more thorough discussion of water supplies and waterworks in the United States, see Martin V. Melosi, The Sanitary City: Urban Infrastructure in America from Colonial Times to the Present (Baltimore: Johns Hopkins University Press, 2000). See also Jacobson and Tarr, Public or Private? Some Notes from the History of Infrastructure, 7.

[5] After examining various options, the city leaders chose the proposal of English-born engineer Benjamin Henry Latrobe, who recommended building a steam-powered pumping plant that would distribute water to the city from the protected Schuylkill River located more than one mile away. Latrobe began the task in 1799 and completed it in 1801. In 1811 the city's Watering Committee replaced the original plant, pumping water to a reservoir atop Fairmount rise and then releasing the water by gravity to the city. The Fairmount Waterworks served Philadelphia until 1911. See Donald C. Jackson, "The Fairmount Waterworks, 1812-1911," Technology and Culture 30 (July, 1989): 635; Michal McMahon, "Makeshift Technology: Water and Politics in 19th-Century Philadelphia," Environmental Review 12

(Winter, 1988): 25-26; Jane Mork Gibson, "The Fairmount Waterworks" Bulletin of the Philadelphia Museum of Art 84 (Summer, 1988): 2-40.

[6] See Harrison P. Eddy, "Water Purification--A Century of Progress," Civil Engineering 2 (February, 1932): 82; J.J.R. Croes, Statistical Tables from the History and Statistics of American Water Works (New York: Engineering News, 1885), 4-69.

[7] Jacobson, Ties That Bind, 3.

[8] Melosi, The Sanitary City, 73-89, 120. See also Charles Jacobson, Steven Klepper, and Joel A. Tarr, "Water, Electricity, and Cable Television: A Study of Contrasting Historical Patterns of Ownership and Regulation," Technology and the Future of Our Cities 3 (Fall, 1985): 9.

[9] In the early years, several waterworks were operated by state chartered corporations financed by private investors. In some small communities, private firms and municipal government were not antagonistic and developed long-term relationships. See Jacobson, Ties That Bind, 25; Jacobson and Tarr, Public or Private? Some Notes from the History of Infrastructure, 7.

[10] For a general discussion of municipal ownership as a public issue, see Ernest S. Griffith, A History of American City Governmen: The Progressive Years and Their Aftermath 1900-1920 (Washington, D.C: University Press of America, 1983; orig. pub., 1974), 86-87.

[11] Committee on Municipal Administration, "Evolution of the City," Municipal Affairs 2 (September, 1898): 726-27; Ernest S. Griffith, A History of American City Government, A Conspicuous Failure, 1870-1900 (Washington D.C.: University Press of America, 1983; orig. pub., 1974), 180; Jacobson and Tarr, Public or Private? Some Notes from the History of Infrastructure, 8.

[12] Letty Anderson, "The Diffusion of Technology in the Nineteenth Century American City," (PhD dissertation, Northwestern University, 1980), 106, 108, 112; Joel A.Tarr, "The Evolution of the Urban Infrastructure in the Nineteenth and Twentieth Centuries," in Royce Hanson, ed., Perspectives on Urban Infrastructure (Washington, D.C.: National Academy Press, 1984), 26, 30.

[13] Jon C. Teaford, The Unheralded Triumph: City Government in America, 1870-1900 (Baltimore: Johns Hopkins University Press, 1984), 7; Kenneth Finegold, Experts and Politicians: Reform Challenges to Machine Politics in New York, Cleveland, and Chicago (Princeton: Princeton University Press, 1995), 15.

[14] Griffith, A History of American City Government: The Conspicuous Failure, 1870-1900, 215; Griffith, A History of American City Government:, The Progressive Years and Their Aftermath 1900-1920, 124-25, 128; Charles N. Glaab and A. Theodore Brown, A History of Urban America (New York: Macmillan Pub., 1976; second ed.), 174-76; Teaford, The Unheralded Triumph, 105, 122.

[15] The germ theory purported that microscopic organisms - or bacteria - were the cause of epidemic disease. A contagionist disease paradigm was replacing a noncontagionist paradigm.

[16] Melosi, The Sanitary City, 117-48.

[17] See Jacobson, Ties That Bind, 33-34, 61, 69.

[18] "Water-Supply Statistics of Metered Cities," American City 23 (December, 1920): 614-20; "Water-Supply Statistics of Metered Cities,"(January, 1921): 42-49.

[19] George W. Fuller, "Water-works," Proceedings of the American Society of Civil Engineers 53 (September, 1927): 1588; F. E. Turneaure and H.L. Russell. Public Water-Supplies: Requirements, Resources, and the Construction of Works (New York: John Wiley and Sons, 1948; 4th ed.), 9.

[20] "Water-Supply Statistics for Municipalities of Less Than 5,000 Population," American City 32 (February, 1925): 185-91; (March, 1925): 309-23; (April, 1925): 435-45; (May, 1925): 555-65; (June, 1925): 665-77; (July, 1925): 47-59; Calvin V. Davis, "Water Conservation-The Key to National Development," Scientific American 148 (February, 1933): 92.

[21] See V. Bernard Siems, "The Advantages of Metropolitan Water-Supply Districts," American City 32 (June, 1925): 644-45.

[22] The states, more than the municipalities or the federal government, were the centers of action for new legislation to control stream pollution. See P. Aarne Vesilind, "Hazardous Waste: Historical and Ethical Perspectives," In: J. Jeffrey Peirce and P. Aarne Vesilind, eds., Hazardous Waste Management (Ann Arbor, MI, 1981), 26; Philip P. Micklin, "Water Quality: A Question of Standards," in Richard A. Cooley and Geoffrey Wandesforde-Smith, eds., Congress and the Environment (Seattle, 1970), 131; Joel A. Tarr, "Industrial Wastes and Public Health" American Journal of Public Health 75 (September, 1985): 1059, 1064; L.F. Warrick, ARelative Importance of Industrial Wastes in Stream Pollution,@ Civil Engineering 3 (September, 1933): 496; John E. Monger, Administrative Phases of Steam Pollution Control,@ Journal of the American Public Health Association 16 (August, 1926): 790; M.C. Hinderlider and R.I. Meeker, "Interstate Water Problems and Their Solution," Proceedings of the American Society of Civil Engineers 52 (April, 1926): 606-08; E.B. Besselievre, "The Disposal of Industrial Chemical Waste," Chemical Age 25 (December 12, 1931): 325-44; Hervey J. Skinner, "Waste Problems in the Pulp and Paper Industry," Industrial and Engineering Chemistry 31 (November, 1939): 1332. For regional systems, see Sarah S. Elkind, Bay Cities and Water Politics: The Battle for Resources in Boston and Oakland (Lawrence: University Press of Kansas, 1998).

[23] Ellis Armstrong, Michael Robinson, and Suellen Hoy, eds. History of Public Works in the United States (Washington, D.C.: American Public Works Association, 1976), 231-32; Roger Daniels, "Public Works in the 1930s: A Preliminary Reconnaissance," in The Relevancy of Public Works History: 1930s--A Case Study (Washington, D.C., Public Works Historical Society, 1975), 9; Public Works Administration, America Builds (Washington, D.C.: U.S. Government Printing Office, 1939), 170, 173-78; "Water Supplies Will be Widely Extended After the War," Scientific American 171 (July, 1944): 18.

[24] Edward T. Thompson, "The Worst Public-Works Problem," Fortune 58 (December, 1958): 102.

[25] George P. Hanna, Jr., "Domestic Use and Reuse of Water Supply," Journal of Geography 60 (January, 1961): 22.

[26] John C. Bollens and Henry J. Schmandt, The Metropolis: Its People, Politics, and Economic Life (New York: Harper and Row, 1970; 2nd ed.), 176; Thompson, "The Worst Public-Works Problems," 102.

[27] Harold E. Babbitt and James J. Doland, Water Supply Engineering (New York: McGraw-Hill, 1949), 40; G.M. Fair, J. L. Geyer, and Daniel Alexander Okun, Elements of Water Supply and Wastewater Disposal (New York: Wiley, 1977; 2nd ed.), 14; U.S. Department of Commerce, Bureau of the Census, Historical Statistics of the United States Part 2 (Washington, D.C.: Department of Commerce, 1975), 619, 621.

[28] Rodney R. Fleming, "The Big Questions...," American City 82 (June, 1967): 94-95; Charles M. Bolton, "A Metropolitan Water Works Is Best," American City 74 (January, 1959): 67-68; Water Resources Council, The Nations Water Resources (Washington, D.C.: GPO, 1968), 5-1-3; T.E. Larson, "Deterioration of Water Quality in Distribution Systems," Journal of the American Water Works Association 58 (October, 1968): 1316.

[29] National Council on Public Works Improvement, The Nation's Public Works: Executive Summaries of Nine Studies (Washington, D.C.: National Council on Public Works Improvement, May, 1987), 37-38.

[30] Neil S. Grigg, Urban Water Infrastructure (New York: Wiley, 1986), 7-8; Carol T. Everett, "So Is There an Infrastructure Crisis or What?" Public Works Management and Policy 1 (July, 1996), 91; Jesse H. Ausubel and Robert Herman, eds., Cities and Their Vital Systems: Infrastructure Past, Present, and Future (Washington, D.C: National Academy Press, 1988), 265.

[31] Ralph A. Luken and Edward H. Pechan, Water Pollution Control: Assessing the Impacts and Costs of Environmental Standards (New York: Praeger, 1977), 4; Environment and Natural Resources Policy Division, Congressional Research Service, Nonpoint Pollution and the Area-Wide Waste Treatment Management Program Under the Federal Water Pollution Control Act (Washington, D.C.: GPO, 1980), 14; Wallis E. McClain, Jr., ed., U.S. Environmental Laws (Washington, D.C., 1994), 2-1 - 2-2.

[32] American Public Works Association, Proceedings of the National Water Symposium: Changing Directions in Water Management (Washington, D.C.: APWA, November, 1982), 11, 32; National Council on Public Works Improvement, The Nation's Public Works: Executive Summaries of Nine Studies, 31.

[33] National Council on Public Works Improvement, The Nation's Public Works: Report on Water Supply, 16; David Holtz and Scott Sebastian, eds., Municipal Water Systems: The Challenge for Urban Resource Management (Bloomington: Indiana University Press, 1978), 71; Grigg, Urban Water Infrastructure, 1, 85.

[34] Bernard H. Ross and Myron A. Levine, Urban Politics: Power in Metropolitan America (Itasca, IL: F.E. Peacock, 1996), 261.

[35] John M. Swomley, "When Blue Becomes Gold," Humanist 60 (Sept./Oct., 2000), 6; Maria Alicia Gaura, "Water a Hot Commodity," San Francisco Chronicle (December 1, 2002), A3; Peter H. Gleick, "The Big Idea Water, Water-Where?" Boston Globe (January 6, 2002), E8.

[36] Swomley, "When Blue Becomes Gold," 5.

[37] Maude Barlow and Tony Clarke, "Who Owns Water?" Nation 275 (September 2, 2002), 11.

[38] This, of course, is ahistorical since water has been commodified long before the onset of the twenty-first century. On the recent claim of the commodification of water, see Peter Gleick, et al, Executive Overview, The New Economy of Water: The Risks and Benefits of Globalization and Privatization of Fresh Water, Internet www.pacinst.org/reports/new_economy_overview.htm, May 4, 2004.

[39] Anthony Lenze, "Liquid Assets," Pittsburgh Post-Gazette (September 16, 2003), C-12; Kim Krisberg, "Privatizing Water Systems Draws Mixed reviews," Nation's Health 33 (March, 2003): 15.

[40] Barlow and Clarke, "Who Owns Water?"13-14; Brad Knickerbocker, "Privatizing Water: A Glass Half Empty?" Christian Science Monitor (October 24, 2002), 1; Philip Lee, "The Wellspring of Life, or Just

a Commodity," Ottawa Citizen (August 16, 2001), A1; Gleick, et al, Executive Overview: The New Economy of Water, 5.

[41] See Sara Grunsky, "Privatization Tidal Wave," Multinational Monitor 22 (September, 2001): 17-18; Curtis Runyan, "Privatizing Water," World Watch 16 (January-February, 2003): 36-37; Julie Lanza, "Cities Mull Privatizing Waterworks," Boston Business Journal 12 (May 11, 1992): 1; Gleick, "The Big Idea Water, Water-Where?" E8; Ursala Hyman, "Wastewater Partnerships," American City & County 107 (April, 1992): 52.

[42] In a few cases the reverse has occurred. For example, city officials in Marysville, Ohio were preparing to initiate eminent domain proceedings against Ohio Water Service Company in 1990 in an effort to purchase the private company. See Brian R. Ball, "Marysville Seeks Control of Private Water System," Business First-Columbus 6 (February 12, 1990), 10.

[43] Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert W. Vishny, "Privatization in the United States," RAND Journal of Economics 28 (Autumn, 1997): 447, 468; Jim Nichols, "Chance to Save Lures Cities to Private Sector," Cleveland Plain Dealer (June 22, 1996), 8A; Bret Schundler, "City Chooses Private Manager for its Water Utility," American City & County 112 (March, 1997): 45..

[44] Charles Fleming, "Sofia's Choice: Water Business is Hot as More Cities Decide to Tap Private Sector," Wall Street Journal (November 9, 1998), A1.

[45] Fleming, "Sofia's Choice," A1; Schundler, "City Chooses Private Manager for its Water Utility," 45; Gleick, et al, "Executive Overview: The New Economy of Water,"5, 7. See also Andrei Shleifer, "State versus Ownership," Journal of Economic Perspectives 12 (Autumn, 1998), 147; Runyan, "Privatizing Water," 38.

[46] Gaura, "Water a Hot Commodity," A3.

[47] Estimate do vary. Some observers argue that only about 85 percent of waterworks are publicly owned. See Gaura, "Water a Hot Commodity," A3.

[48] In many cases the private water companies are agreeing upon long-term contracts (20-25 years) to manage and operate a particular city's waterworks. This has been more typical in recent years than outright purchases.

[49] Lenze, "Liquid Assets," 1; Christopher D. Cook, "Drilling for Water in the Mojave," Progressive 66 (October, 2002): 19-20; Lolis Eric Elie, "Privatization Argument has Its Leaks," New Orleans Times-Picayune (March 31, 2003), 1; Douglas Jehl, "As Cities Move to Privatize Water, Atlanta Steps Back," New York Times (February 10, 2003), 14; David Haarmeyer, "Privatize Seattle Water? Study has Wrong Answer," Seattle Times (December 27, 1993), B5.

[50] Included here are Veolia Environment, Suez, Bouygues Saur, RWE-Thames Water, and Bechtel-United Utilities, and several other smaller companies.

[51] They also have holdings in other businesses as well.

[52] See Grunsky, "Privatization Tidal Wave," 14; Barlow and Clarke, "Who Owns Water?" 12-13; "Veolia Environment," Public Citizen, Internet, www.citizen.org/cmep/Water/general/major water/veolia/index.cfm; Veolia Environment, Internet, www.vivendienvironment.com/en/activities/ water; "Defending the Internal Water Empire," Internet www.icij.org/water; James K. Glassman, "In

Europe, Going for the Water," Washington Post (April 7, 1999), E1; Chris Tolhurst, "Drinking at the Front of Opportunity," Australian Financial Review (May 18, 1999), 39.

[53] Enron was interested in water company acquisitions within the U.S. borders and throughout other parts of the world. For example, they attempted invade the markets in Rio de Janeiro, Berlin, and Panama, and thus posed a threat to the French companies. Fleming, "Sophia's Choice," A1; David Warsh, "What Enron Got Right," Boston Globe (December 9, 2001), E2; Andrew Taylor, "Enron Steps into Global Water Market," Financial Times (London) (July 25, 1998), 19.

[54] "Savoir Faire," Economist 368 (July 19, 2003): 7; Lenze, "Liquid Assets," C12.

[55] Swomley, "When Blue Becomes Gold," 7; Barlow and Clarke, "Who Owns Water?" 13-14; Fleming, "Sofia's Choice," A1; Runyan, "Privatizing Water," 36; Gleick, "The Big Idea Water, Water-Where?" E8.

[56] "Savoir Faire," 7.

[57] Barlow and Clarke, "Who Owns Water?" 12-13; Jehl, "As Cities Move to Privatize Water, Atlanta Steps Back," 14; St. Petersburg (Florida) Times (June 29, 1999), 2E; Samer Iskandar, "Suez Buys Calgon," Financial Times (London) (June 16, 1999), 37; Julie B. Hairston, "Treatment Plant Bidding Could Be Fierce," Atlanta Constitution (April 9, 1999), 3B; Taylor, "Enron Steps into Global Water Market," 19; Charmagne Helton, "Atlanta's Sewer Problems," Atlanta Constitution (March 4, 1997), 5C.

[58] Jehl, "As Cities Move to Privatize Water, Atlanta Steps Back," 14.

[59] Mary B. Powers and Debra Rubin, "Severed Atlanta Water Contract was Tied to Unclear Language," Engineering News-Record 250 (February 10, 2003): 14-15; Mary Buckner Powers, "Atlanta Ends Privatization Deal and Faces Reservoir Lawsuit," Engineering News-Record 250 (February 3, 2003): 14-15; Rick Brooks, "Deals and Deal Makers: A Deal All Wet," Wall Street Journal (January 31, 2003), C4; Paul Rosta, "Stockton Mulls Outsourcing After Atlanta Changes Course," Engineering News-Record 250 (February 24, 2003): 12; Martha Carr, "Water Board Hopes to Learn from Atlanta: City's Privatization Venture Went South," New Orleans Times-Picayune (April 17, 2003), 8. On other debates, see Jim Davis, "Furor over Privatization Stirs Debate Over its Merits," Kansas City Business Journal 17 (June 11, 1999): 4; Jim Hightower, "The Water Profiteers," Nation 275 ((September 2, 2002): 8; Cook, "Drilling for Water in the Mojave,"20-21; Gordon Russell, "S&WB Adds New Duties for Privatization Bidders," New Orleans Times-Picayune (April 4, 2003), 1.