

ARTICLE

Community water system privatization and the water access crisis

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Email: patrick.t.greiner@vanderbilt.edu**Abstract**

One of the most pressing challenges faced by the global community in the 21st century is the need to extend potable water access to more than 2 billion people across the planet. Debates concerning how such a project should be undertaken have centered on whether or not water utility systems would be more effectively managed and extended under private ownership than they might be under public ownership models. In this article I explore this issue, providing an overview of recent research concerning the ways in which community water system ownership regimes succeed, and fail, in their attempts to provide access to readily available potable water for as much of the population as is possible. In the course of doing so I provide a discussion of the form that debates over privatization of water resources have taken, as well as how the act of privatization has been found to impact access to water systems and the quality of the service they provide. Ultimately, I explain that, while creative solutions to the water access crisis are clearly necessary, privatization appears to be an inadequate and often counterproductive means of addressing the issue.

1 | THE WATER ACCESS CRISIS

In the year 2015, roughly 2.12 billion people across the globe lack access to improved water sources. Put differently, 15 years into the 21st century approximately one in every three people on the planet were unable to readily draw upon clean, safely managed, potable water when needed. The problem is greater still, of the 2.12 billion who lacked access to improved water sources, roughly 844 million did not live within 30 min of a well-managed safe water source (UN DESA, 2018). Extending effectively managed water sources to such populations represents one of the greatest and most pressing challenges that the global community is confronted with. While substantial efforts are

underway to ensure that this challenge is adequately met (UN, 2018), the stress that a changing climate is placing on global water resources (Gerten et al., 2013; Hoegh-Guldberg et al., 2018), and rapid shifts in humanities' populations centers (UN Population Fund, 2007, 2014) suggest that absent meaningful and well-considered social intervention this problem will likely get much worse before it gets better. What such intervention should look like is, and has been, a matter of thorough and often deeply ideological debate.

Of course, debates concerning water resource management and ownership extend beyond the question of what approaches will most effectively enable the infrastructural expansion of water systems to underserved populations. Equally important are discussions concerning which water operation complex will most favorably enable the effective maintenance and repair of existing water system infrastructure. It is also increasingly apparent that the outcomes of ongoing water resource debates are of great interest for populations around the globe—even in nations that have high levels of economic development, such as the United States. While wealthier nations are often considered to be mostly exempt from concerns of water provision, safety, and access, the 2014 water quality crisis in Flint, Michigan put the lie to any claim that the United States has no need to concern itself with how water resources are maintained and distributed (Butler, Scammell, & Benson, 2016). The Flint crisis illustrated the need for economically advantaged nations to remain vigilant with respect to their water quality, particularly in historically disadvantaged communities. Similarly, recent estimates demonstrate that if water infrastructure management strategies are not implemented cautiously and efficaciously it is likely that the number of U.S. households that lack the financial resources to access community water systems will increase from 11.9 to 35.6% of the population by roughly 2025—a result of municipalities and other providers raising water service costs to maintain infrastructure stability (Mack & Wrase, 2017).

In what follows, I will provide an overview of current research concerning the ways in which various community water system governance strategies succeed, and fail, in their attempts to provide access to readily available potable water for as much of the population as is possible. I will proceed by exploring the form that debates over approaches to ensuring water system access have taken. In the course of doing so, I highlight the many challenges that biophysical and cultural attributes of natural resources and public goods pose for the economic logic of private actors in market systems, honing in on the unique traits of water resources and utility systems along the way. To better illustrate the points made in much of the literature, I highlight two notable cases in the community water system privatization literature—Cochabamba, Bolivia and Camden, New Jersey—drawing out the ways challenges posed by privatization came to fruition in these well-known cases of private water utility ownership and management. I conclude by turning to a discussion of the role that social inequality and issues of environmental justice play in discussions of access to the natural resource that is most indispensable to human social systems, and biological life writ large—water.

2 | MANAGEMENT OF THE COMMONS AND THE PRIVATIZATION DEBATE

To a notable degree, discussions of the socio-environmental costs and benefits of community water system privatization have functioned as a conceptual fractal of the larger debate concerning the appropriate role of the public and private sectors in efforts to manage common pool resources (CPRs). Here, I mean by commons—or CPRs—those goods and spaces that are shared, used, and relied upon, by all and have attributes that make restricting such openness a pecuniary challenge.¹ The debate over how to best manage “The Tragedy of the Commons,” sparked by Garret Hardin's (1968) work of the same name, has largely focused on the costs and benefits of implementing the two most commonly called upon ownership regimes and governance approaches—centralized government control and conversion to private property—as means of staving off the degradation of the common pool natural resources that social functionality is predicated upon. While it is now broadly accepted that there are indelible links between natural and social systems, and that the vitality of one system in this interchange deeply depends on the successful management of the other (Liu et al., 2007), the complexity of interactions between earth systems and the social

structures built within them can make pinpointing the various outcomes of specific ownership and governance approaches quite difficult (Besek & York, 2018). Likely as a result of such difficulties empirical research has yielded substantial support for arguments that common pool resources are best managed through private initiatives and ownership (Carvalho, Marques, & Berg, 2012; Hailu, Osorio, & Tsukada, 2012). However, a great deal of evidence suggests water access and quality is best ensured through public governance strategies and regulatory schemas (Bel, Fageda, & Warner, 2010; Estrin & Pelletier, 2018). It was not until rather recently that the myopia of the terms of such debates was laid bare, and it was argued that in many cases common pool resources have been successfully managed through community governance and ownership strategies, as well as through polycentric governance approaches which draw strength from community, private, and public actors in a number of different contexts and with respect to a wide range of natural resources (Dietz, Ostrom, & Stern, 2003; Basurto & Ostrom, 2009).

Perhaps it should not be surprising then that a rather similar trajectory has emerged—albeit slightly delayed—in research and policy deliberation with respect to the management and ownership of community water systems. Such debates have, seemingly, been mired in the ideological ruts that were laid forth by the broader discussion of common pool resource management. Namely, much work has been done by policy and scholarly communities to justify the establishment of the privatist management and governance paradigm to efficiently conserve and distribute natural resources across the globe (Hall, Lobina, & Terhorst, 2013; Lobina, 2012; Lobina, 2017). The privatist paradigm, which has been the institutional approach to commons management of choice for nearly four decades (Hall et al., 2013), insists that to manage common pool resources as effectively as possible our social institutions must treat them as commodities, and in doing so relinquish control of them to the market and private operators (Lobina, 2017). In turn, there have been strong responses from the activist, science, and non-profit communities that have aimed to highlight the efficaciousness of the communitarian management and governance paradigm relative to privatist approaches (Lobina, 2017). In such schemas, common pool resources are depicted as necessary to the continuation of human life and social systems, and, accordingly, are treated as goods that must be protected by public institutions to ensure their ongoing availability and viability for all stakeholders. It is worth, then, outlining in greater depth the nature of the broader debate over the role of privatization in the management of public assets, particularly water.

Recent research by scholars of community water system management has begun to consider that, perhaps, privatization practices have shifted in such a way that the traditional terms of the debate are no longer able to readily capture the extent to which private ownership, governance, and management approaches are present and effective (Bakker, 2004; Bakker, Kooy, Shofiani, & Martijn, 2008; Bakker, 2014; Pierce, 2015; Greiner, 2016). Prior to the development of such understandings, it was common for studies to draw distinct lines that left many decision makers and activists either unabashedly supporting the broader complex of policies that are often identified as falling under the umbrella of market environmentalism (Bakker, 2004), or condemning what came to be known as the neoliberalization of nature (Castree, 2008; Kathleen, 2003) and/or accumulation by dispossession (Harvey, 2003). Bakker (2014) usefully defines market environmentalism as the reliance upon market tools and strategies (e.g., encouragement of resource ownership by private firms/public disinvestment, the use of pricing schemes such as full cost resources pricing and ecosystem service pricing, the implementation of economic dis/incentives, and the creation of resource-specific trading markets) to effectively govern natural resources. In other words, in order to ensure the long-term viability of common pool resources, and the populations that must rely on them, proponents of market environmentalism hold that the state's role in environmental management must be eliminated and replaced by the private sector.

Applying a critical eye to market environmentalism, those who have contributed to scholarship on the neoliberalization of nature (including Bakker, 2004, 2005) conceptualize such processes as part and parcel of the broader neoliberal economic turn that was initiated in the Reagan-Thatcher era. Understood in concert with the global project of neoliberalization, scholars of the “neoliberalization of nature” (e.g., Kathleen, 2003; Bakker, 2005; Castree, 2008) typically identify the efforts of market environmentalism to introduce economic logics to the management of natural resources as a collective strategy of the capitalist class, wherein the state and supranational institutions are simultaneously reshaped, and enlisted, in an attempt to dismantle publicly shared mechanisms of economic

control and shore up “individual entrepreneurial freedoms...private property rights, free markets, and free trade” (Harvey, 2005, p 2). Similarly, albeit much more broadly, Harvey’s (2003) accumulation by dispossession is used in many instances (Bakker, 2005; Swyngedouw, 2005; Castro, 2007; Goldman, 2007; Spronk & Webber, 2007; Roberts, 2008; Araghi, 2009; Ahlers, 2010; Jaffee & Newman, 2013; Gellert, 2015; Greiner, 2016) to identify the privatization, or enclosure, of natural resources and commons spaces as actions that are necessary in order to close fundamental contradictions within capitalist socio-economic relations. More precisely, accumulation by dispossession draws upon the work of Luxemburg (2004) and Marx (1976) to dislodge primitive, or primary, accumulation² from the nascence of capitalism and reestablish it as an ongoing process whereby markets are continually infused with new sources of labor and capital.

In this broad, theoretical conceptualization of the problem, it is easy to see how the application of market environmentalism quickly became a controversial topic. There are few areas of social life, in fact, where more controversy is sparked by the prospect of privatization than the arena of water management and distribution—as is evidenced by the culmination of the anti-privatization movements of the 1990s and early 2000s in a consensus declaration of a Human Right to Water and Sanitation by the U.N. General Assembly in 2010 (Murthy, 2013). Despite such controversies market environmentalism, in so far as it is characterized by the private ownership and operation of public water utility systems, has been fairly common practice for as long as there have been water utilities (Davis, 2005). Indeed, the sanitary reform movement of the mid-19th century ran into many difficulties as it attempted to transform the water management landscape from one where private parties operated their own wells and cesspools—to the benefit of themselves and/or their neighborhood—to one where the task of ensuring water sanitation and distribution was centrally managed. The most imposing difficulties faced at the time were cultural and ideological. For example, American individualism tended to create spaces amenable to austere municipal governments and correspondingly minimal market regulations (Ogle, 1999). Considering the prevalence of the individualist ethic throughout the history of the western world’s development, it should not be very surprising that privately owned and operated water utility systems abound. In fact, the history of individualism is etched into the contemporary U.S. water utility services landscape to such a degree that roughly half of all water systems that serve some segment of the public are privately owned³ (Grigg, 2018). The United States represents the extreme of this historical tendency, however, with nations around the world typically having notably fewer privately owned water systems, although detailed ownership data is rather difficult to come by outside of the United States (Grigg, 2018).⁴

It would seem then, that the controversy surrounding the presence of market environmentalism strategies in water management, sanitation, and distribution sectors has less to do with the existence of private firms in water management per se, although that is certainly an important part of it, than with the expansion of private holdings at the expense of established public systems. Put differently, the fierce opposition to water privatization over the course of the last four decades is tightly bound up with the more general opposition to neoliberal processes of enclosure, especially their rapid expansion to—and imposition upon—Global South nations.

Such opposition was, in truth, quite a surprise for many decision makers in the years following the neoliberal turn, as the justification often cited for the push to privatize was the inadequate performance of publicly owned firms. As proponents of privatization would argue, the dynamics of private businesses introduced incentive structures that were missing within public institutions (Estrin & Pelletier, 2018). Other common arguments suggested that the profit-maximizing decision-making processes of private companies would eventually lead to higher levels of efficiency, and that the competition that characterized markets unfettered by government regulations would ensure such a profit-maximizing rational was present (Stiglitz, 2008)—ultimately establishing a general equilibrium that would maximize the benefits received by all (Roland, 2008). When it came to the provision and sanitation of water, it was argued that such dynamics would lead to improvements in the function of extant systems, as well as a rapid expansion of water system infrastructure to unserved populations around the globe (Davis, 2005). Some support has been found for such ideas. For example, in a cross-national study, Kariuki and Schwartz (2005) found that competition among small scale independent service providers, or small-scale private service providers, led to a general decline in the cost of water service. Most would now readily admit, however, that such assertions were deeply

ideological in nature (BraadBaart, 2007), and had little empirical or theoretical weight behind them. Research concerning the failure of private water distribution firms to achieve such goals around the globe has since underlined the dubious nature of many of the claims used to back privatization projects. For instance, in an examination of the efficacy of private participation in public water system management, or public-private partnerships, during the 1990s Braadbaart (2005) found that poor design and political opportunism led to a fairly high rate of failure in such efforts. Similarly, Ahlers, Schwartz, and Perez Guida (2013) found that in Mozambique, even small independent service providers did not compete with one another in ways that benefitted them or their customers.

3 | THE CHALLENGES OF PRIVATIZATION

In an abstract sense, the unrealized promise of efforts to privatize water systems, along with other public goods for that matter, can be attributed to the market failures that often characterize sectors dominated by public entities. Such sectors are rife with information asymmetries that prevent truly profit-maximizing logics from being realized (Roland, 2008; Stiglitz, 2008). For instance, it can be quite difficult for operators to effectively estimate individual demand, the adequacy of supply to meet such demand in the future, or the extent of equipment in disrepair—particularly in sectors that rely upon extensive and hidden infrastructure, such as water and electric utilities. One example of such difficulties, albeit in the electricity sector, are the rolling electricity blackouts that literally left Californians in the dark, and footing the bill of price hikes, in the summer of 2000. This very public market failure developed as a result of an unanticipated capacity shortage, and an inability for Californian utilities, such as Edison and Pacific Gas and Electric Company (PG&E), to freely raise customer rates. The lack of adequate information concerning the function of the wholesale energy trading market, combined with a cultural belief that electricity should be provided affordably, ultimately resulted in PG&E filing for bankruptcy, and the Californian government, not to mention the population it represents, spending U.S. \$7.6 Billion to purchase the electricity that the private utility firms could no longer afford to acquire (Woo, 2001).

Even more problematic for the belief that privatization might bring greater competition to the water utility and sanitation services sector is the high cost of infrastructure development, which creates the conditions necessary for a “natural monopoly” (Roland, 2008) to arise. In such circumstances, the high cost of developing the fixed capital, or infrastructure, necessary to service provision, and the fact that infrastructures necessarily must be placed in more or less the same locations, stifles the ability of firms to compete and would likely lead to a single operator dominating the field. Yet, speaking abstractly once again, even if such difficulties could be overcome the most common issues with privatization arise from the process of privatization itself. That is to say, the act of transferring goods held by the public to a private entity provides many opportunities for corruption to take hold. For an example, one need to look no farther than the rapid privatization of the Russian economy following the collapse of the Soviet Union. In that well-known instance, it is estimated that roughly 70% of privatized entities were handled in such a way that insiders were given 51% of firm shares before auctions began (Alexeev, 1999). The fallout of such political opportunism is readily apparent in the rampant wealth inequality that has taken hold in Russia since, as research has shown that the Gini index for income inequality increased from a fairly low 0.3–0.4 in 1989 to above 0.6 in 1996 (Guriev & Rachinsky, 2006; Novokmet, Piketty, & Zucman, 2018), placing it for a time among the most unequal nations in the world.

In the case of water distribution and sanitation services, there are additional, more precise reasons why difficulties are encountered following privatization. The biophysical attributes of water do not easily lend themselves to commodification. Water, unlike most other resources and commodities, tends to move and is referred to as a “flow resource” (Bakker, 2007:442). Water's flow complicates attempts to manage it to a significant degree. Water's constant movement exposes it to many different environments and pollutants, and keeping track of just what environmental factors water being distributed to particular populations has been exposed to, how severe the exposure is, and even where water is going (leaks are quite common in water utility systems and result in about 25% of

distributed water being lost, on average [Garcia & Thomas, 2003]), makes the collection of perfect information extremely difficult and costly. Importantly, perfect information is a requirement of well-functioning markets, and in the case of water, it is necessary in order for pricing to occur correctly (see Bromley, 1999 for a good overview of markets). Put differently, the difficulty of attaining information about water results in an inability to effectively incorporate the cost of externalities and resource scarcity into it as a commodifiable good. In a practical sense, this means that it is very difficult to signal that particular water systems are causing public health issues (e.g., the Flint, MI water crisis) or that they are in danger of water scarcity (e.g., day zero in Cape Town, South Africa) through pricing alone (Bakker, 2005). Furthermore, water is heavy and, as suggested by its tendency to flow, fluid. A result of these two attributes is that water is very difficult to exchange on a market without a dedicated infrastructure in place to accommodate it (Bakker, 2005).

Compounding the challenges to commodification processes that derive from water's biophysical characteristics, is the fact that water is necessary to human life and is deeply entrenched in innumerable cultural practices and religious traditions (Bakker, 2007). The physiological and socio-cultural import of water makes it highly likely that the transfer of water resources, and the utilities used to manage them, from public to private hands will be a politically contentious affair. Combined, the biophysical and socio-cultural characteristics of water make it an "uncooperative commodity" (Bakker, 2005; Bakker, 2007) and work to make the process of privatizing water utilities and resources a much more challenging feat than the privatization of other goods.

Considering the many difficulties presented by the application of neoliberal, purely market-driven approaches to the management of water and other natural resources, one might ask why it is that so many governments have agreed to transfer ownership rights of such goods to private firms at all. This question is an important one, and to find the answer we must briefly explore the conditions that have characterized the geopolitical stage during the last several decades. Throughout the 1980s and 1990s, the neoliberal ethic that was championed by Reagan, Thatcher, Volker, Deng, Friedman, and others was well ingrained into national and international approaches to policy craft in the guise of what eventually became known as the "Washington Consensus" (Harvey, 2005, Klein, 2007; Stiglitz, 2008)—a broad guide to restructuring national economies that arose from the observation of formerly socialist nations' transition to capitalism (Roland, 2001). Under the Washington consensus—which has variously been referred to as economic shock therapy, the shock doctrine, and disaster capitalism (Klein, 2007)—it was believed that during political-economic moments of opportunity (e.g., economic collapse, regime change, natural disasters, war, etc.) policies should be implemented that would irreversibly move the economy in question in the direction of economic liberalism. Such policies consisted of rapid resource privatization, market deregulation, and restrictive monetary policies aimed at limiting currency inflation (Hanousek, Kočenda, & Svejnar, 2008; Harvey, 2005; Roland, 2001). As already noted above, these types of policies were not readily accepted by nations and populations around the globe. In order to implement such policies in the face of any opposition, international lending institutions, particularly the International Monetary Fund (IMF) and the World Bank, would make development loans contingent upon their adoption. Together, the set of policies that loans to formerly socialist and Global South nations were contingent on became known as structural adjustment programs (SAPS), and any nation hoping to get a dime from the global community would need to implement them. Importantly, the privatization of public infrastructures, particularly water utilities, was almost always on the list of demands made within SAPs. It is worth noting that this means of implementing the privatization of water systems occurred on many other scales as well. As an example of water privatization being enacted by leveraging development resources at a municipal level, I turn to a brief discussion of the privatization of Camden, NJ's water utility in 1999.

4 | ENFORCED PRIVATIZATION, THE CASE OF CAMDEN

The City of Camden, New Jersey has had a long history of economic struggle and political corruption. It was this reputation that eventually resulted in a highly contested professional service contract being awarded by the city of

Camden to the water utility corporation U.S. Water—a subsidiary of Bechtel Group—in the summer of 1999. At the time of privatization, the city was ranked as one of the poorest in the country (The Int'l Consortium of Investigative Journalists, 2003), had an unemployment rate (7.8%) that was more than double the national average (3.7%), and had a nonwhite population of 83.2% (U.S. Census Bureau, 2000). While most would agree that the private management of Camden's water utility system by U.S. Water ultimately made the situation much worse (Boxer, 2009), it was the municipality's high levels of unemployment and poverty that led State leaders to believe Camden was incapable of maintaining its water system infrastructure. Giving more weight to this perception was the fact that Camden's water quality had suffered since the 1970s (The Int'l Consortium of Investigative Journalists, 2003). For example, following Camden's infamous race riots and a mass relocation of much of the city's population to Philadelphia, city officials were made aware of the presence of heavy metals and toxic chemicals in their water system. The fact that Camden's water source is protected by layers of shale, and as a result is quite clean, made it evident that the presence of these toxins was the result of a poorly maintained water utility infrastructure. Compounding this problem, in the 1980s the New Jersey Department of Environmental Quality (NJDEQ) found that Camden was losing a great deal of its water to leaks in its infrastructure, and subsequently informed the city their use of the aquifer was to be drastically reduced (The Int'l Consortium of Investigative Journalists, 2003).

The problem of water loss due to Camden's poor infrastructure continued until a water management study commissioned by the Camden city government and the NJDEQ recommended that the city privatize its water system in order to increase efficiency (Boxer, 2009). In search of an alternative to privatization, the city hired an outside consulting firm in 1996 to perform a similar analysis. The results of this firm's study indicated that to correct their infrastructural problems, Camden would need to implement a 130% rate hike over the course of the following 5 years and invest roughly \$88 million dollars into their infrastructure. The Camden city government found this fiscally unfeasible and, as a result, no steps were taken to repair the city's ailing water system. Finally, in 1998, the state of New Jersey informed Camden that its water allocation permit would not be renewed if no changes were made. Seeing no alternatives, Camden made the decision to contract out the management of its water system. By utilizing a legislative loophole, Camden's city government was able to bypass the competitive bidding process that is typical of such undertakings and, following a publicly contested vote, awarded U.S. Water a 20-year management contract (the outcome of the city council's vote was 4–2 for awarding the contract) (Ott, 1998; The Int'l Consortium of Investigative Journalists, 2003).

The citizens who voiced their opposition to the approval of the contract did not do so without reason (Ott, 1998; The Int'l Consortium of Investigative Journalists, 2003). The contract that the city council approved stipulated that Camden pay U.S. Water roughly \$215 million dollars over the course of the 20-year agreement in the form of citizen's utility rates. In exchange for this payment, U.S. Water would take over the task of rate collection and provide the city with a \$20 million-dollar concession. However, the city would retain responsibility for all capital improvements, which was the problem that Camden needed to correct most desperately, as well as for all “accounting and financial reporting of water and wastewater operations” (Boxer, 2009). What is more, the concession would be paid back to U.S. Water over the course of the contract at such a high interest rate that by the year 2019, when the contract would end, the city would have paid U.S. Water a total of \$44 million dollars (The Int'l Consortium of Investigative Journalists, 2003).

The experience of Camden presents a striking example of how the difficulties faced by a municipality might be leveraged to privatize water systems. While Camden's water utility was clearly in need of help it is far from clear that privatization provided a useful solution. In fact, later analysis (Boxer, 2009) of the instance showed that despite the extravagant cost to the population, the extent of the privatization effort's failure was staggering, a point to which I will return during a discussion of the social outcomes of Camden's foray into privatization below. However, the case of Camden is not unique, and ultimately, along with a number of other instances, illustrates the difficulty of minimizing the political opportunism that so often characterizes privatization processes, as well as the loss of sovereignty that governments in need of financial assistance might experience when it comes to managing their water system.

5 | IMPACTS OF PRIVATIZATION ON COMMUNITY ACCESS TO WATER SYSTEMS

Having developed an understanding of the difficulties that arise from bringing market principles to bear on water systems through privatization from an economic perspective, as well as how privatization continues even in the face of such difficulties, it is important to consider how it is that water system ownership and management can impact the extent to which communities are able to access water. While privatization of water resources and utilities was, at least ostensibly, conceived of as a means of extending access to improved sources of potable water, in practice water system privatization has been riddled with difficulties of inequality and unaffordability.

An increasingly well-known instance of such problems is the 2003 Water Wars of Cochabamba, Bolivia. Confronted with extreme economic hardship in 1986, just 1 year after its first successful democratic election, Bolivia accepted the terms of an IMF SAP in exchange for the prospect of receiving international aid (Estache & Trujillo, 2008; Klein, 2007). In an effort to fulfill the requirements of their SAP the Bolivian government introduced Law 2029 in 1999. The new law established water control concessions in areas with a population greater than 10,000 people. Under Law 2029 those firms granted the concessions would be given sole control over water rights in the area the concession applied to (Assies, 2003). Upon the passing of Law 2029, the firm Aquas del Tunari, a subsidiary of the international corporation Bechtel, was granted control of the water complex in Cochabamba. Almost immediately the cost of water for the residents of Cochabamba was raised three-fold (Barlow, 2009; McClanahan, 2014). In a nation where the average annual income was well under U.S. \$1,000 a year (Klein, 2007), an increase in the cost of water of U.S. \$40 a month is prohibitive and has the potential to dramatically increase the water stress the population experiences (Barlow, 2009). Just as troubling, the expansive nature of the concession granted to Aquas del Tunari under Law 2029 allowed the company to place meters on wells which residents had dug privately, enabling the firm to charge members of the Cochabamba community for water that they played no role in providing. Members of the Cochabamba community responded swiftly, taking to the streets in concerted acts of protest and civil disobedience that were met with violence by the Bolivian army (Barlow, 2009; McClanahan, 2014). The protests ultimately succeeded, and by the Spring of 2000 Aquas del Tunari's concession was repealed (Assies, 2003; Barlow, 2009). Although the Cochabamba Water Wars came to an end quickly, they demonstrated to activists and policy makers around the globe just how severely privatization could limit access to community water systems.

While Cochabamba brought concerns with water privatization to the global community's attention, it is far from the only instance of water privatization that has led to issues of community water access. In fact, in an analysis of the 500 largest water systems in the United States, Food and Water Watch (2016) found that households that receive their water from utility systems that have been privatized pay 59% more on average than households who receive their water from publicly owned systems. It is also the case that the burdens of privatization are not shared equally throughout the nation, or the world. This inequity partially results from the fact that, throughout the 21st century, increasing awareness of the technical difficulty and political contentiousness of water privatization has shifted the logic employed by firms seeking to privatize water utility systems. This logical transformation largely consists of firms being more selective about when and where they enter into a contract with a municipality, and has led some to refer to the privatization of water utilities as a variegated neoliberal process (Brenner, Peck, & Theodore, 2010; Bakker, 2013; Greiner, 2016). The term variegated neoliberalism is meant to suggest that neoliberal approaches to water resource management are only applied in those places and times when privatization is likely to be politically uncontroversial and economically beneficial to the firm taking over the utility. As a result, firms will target municipalities that are unlikely to attract political attention, do not require high levels of repair and investment, and are in areas where rate hikes are able to be financially managed by the populations experiencing them (Bakker, 2013; Greiner, 2016). In a nation like the United States, where residential segregation is high, such a logic has important environmental justice implications (Butts & Gasteyer, 2011).

For instance, research has shown that U.S. political units with higher percentages of racial minorities, as well as those with lower overall population sizes, are more likely to have private water utilities in them than their whiter,

more populous counterparts (Greiner, 2016). Such findings suggest that firms attempt to privatize water utilities in these spaces, as they are less investment intensive and likely have less political capital to mobilize to shut such projects down. Similarly, research has demonstrated that areas with a greater number of racial minorities are subjected to higher water utility rates, while areas that are home to fewer households—and are more rural—tend to pay more for their water as well (Butts & Gasteyer, 2011). Taken together such findings can inform the current water access crisis in important ways. Water utilities in urban, more populous areas tend to provide water at a lower cost as a result of the fact that the burden of maintaining and, when necessary, extending the infrastructure is shared among a greater number of people. However, in the United States, many urban populations are shrinking as higher efficiency in the manufacture sector leads to a decline in the number of available jobs, a phenomenon that has hit the Rust Belt cities in particular, but is occurring everywhere (Butts & Gasteyer, 2011). An important result of this transition is that municipalities will struggle to effectively maintain their infrastructure, and may feel the need to introduce substantial price increases in water utility services in order to meet that need—a possibility that is projected become more and more problematic as time goes on (Mack & Wrase, 2017).

If we take seriously the notions that places with higher numbers of minorities, and places with lower populations are more likely to experience privatization, while keeping in mind that these areas also tend to pay higher prices for their water system services, then a concerning possibility is that the experiences of Camden, NJ, and Cochabamba, Bolivia will become more common in the future. This is worthy of concern, as privatized water utilities tend to have a record of less adequate service, particularly in areas where customers are unable or unwilling to afford rate hikes and in areas with smaller populations (Pierce, 2015). For an example, we can return to the case of Camden. The State's audit of United Water's performance in Camden demonstrated that the company had failed to meet its contractual obligations on a number of counts. For example, Boxer (2009) found that between 2004 and 2008, the management provided by United Water resulted in losses of 45% of the city's water supply a year. This loss, in turn, cost the city an average of \$1.7 million dollars a year in annual revenue. Additionally, United Water failed to collect more than \$4.5 million dollars in rates that were over 90 days past due. United Water also required Camden to pay \$3.2 million dollars in charges for changes to the contract that the city never approved. This \$3.2 million was in addition to \$12.1 million dollars that was billed to Camden by United Water without documentation or city approval. What's more, Boxer's audit also noted that United Water provided "inadequate system maintenance for assets such as water storage tanks, fire hydrants and well casing vents" posing "potential health and safety risks to city residents" (2009, p. 6). A similar case can be seen in the privatization of the water utility system that serves the population of Atlanta, Georgia during the 1990s, where "water ran orange to brown for many customers and... low pressure or insufficient water treatment made the water unsafe to drink" (Arnold, 2009, p. 800). These are some of the most visible cases of problems that have occurred in the wake of privatization, but it should be kept in mind that there are many other instances of inadequate service from privatized systems as well (Hall, Lobina, & Corral, 2011).

6 | CONCLUSION

The privatization of water utility systems has been presented as a solution to the global water access crisis for decades. Despite this, most work on the impact of water privatization suggests that the strategy is far from capable of meeting such a daunting challenge, and that in many instances issues of access may in fact be compounded by privatization. This realization has led to an apparent retraction in the practice of privatization, particularly in nations like the United States. As of 2014, 87% of the U.S. population that relies on water infrastructure is served by public water utility firms, while the same could only be said about roughly 83% of the population in 2007 (Food and Water Watch, 2016; Grant, 2015). Globally, we see a different story, as it is estimated that in 2010 about 12% of the world population was served by privately owned utility systems, but that number is projected to increase to 20% by the year 2025 (Owen, 2010). Although it is unclear exactly how extensive private water systems will be in the future, or even how the privatization process will function, as it is regularly changing (Pierce, 2015; Bakker, 2014), it is becoming abundantly clear that civil movements around the globe have led to a rise in the re/municipalization of water systems to date (Food and Water Watch, 2012;

Lobina, 2017; McDonald, 2012). Furthermore, it has been found that in locales that have been re/municipalized service has often been improved, efficiency increased, and costs reduced (McDonald, 2012). Despite this, the problem of water system expansion remains, and far too many people go without access to water. As the case of Camden shows, just putting water systems in public hands will not be enough. While Camden's contract with United Water only served to intensify the challenges that the population faced, it was the water utility struggles the city contended with under municipal management that led the State to call for privatization in the first place. Considering as much, it seems evident that substantial changes must be made to the way that our water is managed and distributed. The shape those changes might take is uncertain, and beyond the scope of this essay. What is certain, is that research into the impact of different water ownership and management regimes will be critical in the years to come.

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ENDNOTES

- ¹ In the influential work that much of these discussions have built upon, "The Tragedy of the Commons" (Hardin, 1968), commons are referred to in the sense put forward by Victorian economist William Forester Lloyd. As Hardin (1968) notes, we should understand them as "pasture open to all" (p. 1244). In Hardin's subsequent discussion he extends the concept, applying it to park lands, water and air, shared vistas, and even "the propagation of sound waves in the public medium" (p. 1248). I rely on the definition put forward by Basurto & Ostrom (2009): "a natural or man-made resource system that is sufficiently large as to make it costly (but not impossible) to exclude potential beneficiaries from obtaining benefits from its use" (p. 30).
- ² Primary accumulation refers to political acts in the past that removed peasantry from means of subsistence (e.g., land, forests, and other natural resources) in order to concurrently generate a capitalist and a laboring class, thereby breathing life into the current economic system.
- ³ It should be noted that, while about half of all U.S. water utility systems involve the private sector in their operations, such systems are patronized by a disproportionately small percentage of the total population served by water systems. Recent estimates suggest that roughly 86% of the U.S. population that relies on community water systems for water provision are served by publicly owned and managed systems (Food and Water Watch, 2016; Grant, 2015).
- ⁴ Estimates suggest that, globally, somewhere between 10% and 15% of water utility systems rely on the private sector in some capacity or another (Murthy, 2013; Pierce 2015).

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