Drinking Fountains:
The Past and Future of Free Public Water in the United States

By

Josselyn Ivanov

BA in Architecture
Rice University
Houston, Texas (2007)

Bachelor of Architecture
Rice University
Houston, Texas (2009)

Submitted to the Department of Urban Studies and Planning
in partial fulfillment of the requirements for the degree of

Master in City Planning

at the

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

June 2015

Author Signature redacted
Department of Urban Studies and Planning
(May 14, 2015)

Certified by Signature redacted
Anne Whiston Spirn
Professor of Landscape Architecture and Planning
Thesis Supervisor

Accepted by Signature redacted
Professor Dennis Frenchman
Chair, MCP Committee
Department of Urban Studies and Planning

DRINKING FOUNTAINS

THE PAST AND FUTURE OF FREE PUBLIC WATER IN THE UNITED STATES

Josselyn Ivanov

Submitted to the Department of Urban Studies and Planning
on May 19, 2015 in partial fulfillment of the requirements for the
Degree of Master in City Planning

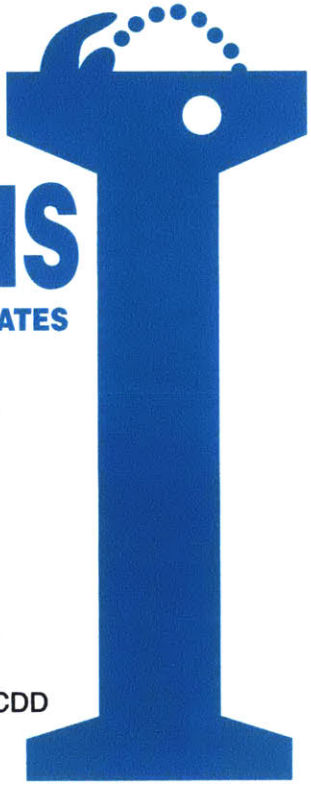
ABSTRACT

Drinking fountains have a rich history as pieces of urban infrastructure in the United States. Installed in prominent public squares to reduce disease, help the poor, and promote a temperance agenda, early American drinking fountains often fulfilled dual roles as public art and functional public good. But today's drinking fountains, when installed at all, are purely utilitarian: undesigned in terms of both form and urban placement. Shoved between bathrooms and trashcans and usually broken, drinking fountains have fallen on hard times in the public realm. Many Americans express skepticism of public water sources, reflecting underlying attitudes about distrust of government and public infrastructure.

There are compelling reasons to rethink our relationship with drinking fountains. Today, the United States confronts a new set of challenges: neglected urban spaces, lifestyle-related disease, privatization of public goods, socio-economic inequality, and plastic pollution. Drinking fountains may be uniquely suited to help confront these problems by cutting down on bottle waste, providing accessible water for homeless populations, reducing sugar-sweetened beverage consumption, facilitating exercise, and adding interest and beauty to public spaces - but they will only be able to achieve these goals through thoughtful design and maintenance. In surveys, people were more likely to drinking from outdoor drinking fountains if they believed that they were clean, safe, and beautiful; the importance of appeal in decision-making has been understood by corporations like Coca-Cola for decades, but has been little-considered in promoting public water.

Further, drinking fountains, seemingly insignificant urban elements, are key indicators of cultural attitudes about the public good: do we care only for ourselves and our families, or do we pool our resources and work together to bring benefits to the entire community? Addressing the problems in current American drinking fountains and drinking fountain perceptions could elevate them to address some of today's most pressing problems.

Thesis Supervisor: Anne Whiston Spirn
Title: Professor of Landscape Architecture and Planning



DRINKING FOUNTAINS

THE PAST AND FUTURE OF FREE PUBLIC WATER IN THE UNITED STATES

JOSSELYN IVANOV

Submitted to the Department of Urban Studies and Planning in partial fulfillment
of the requirments for the degree of Master in City Planning 2015
Massachusetts Institute of Technology
City Design & Development
May 19, 2015

ADVISOR: **ANNE WHISTON SPIRN**
Professor of Landscape Architecture and Planning, DUSP CDD

READERS: **BRENT D. RYAN**
Associate Professor of Urban Design and Public Policy, DUSP CDD

SAM BASS WARNER, JR.
Professor Emeritus, DUSP CDD


0233506
Did You Know?


ERECTED 1891
TOTAL ABSTINENCE
IS THE WAY TO HANDLE
THE ALCOHOL PROBLEM

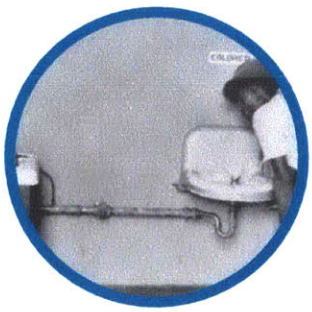


TABLE OF CONTENTS

INTRODUCTION

There was an old drinking fountain at the entrance to Cottage Park. Every day, we would walk the three blocks from our house to play at the playground, but the first stop was always that drinking fountain. I would climb up onto the step, peer over the top, and try the handle, thinking, "Maybe today." The handle turned easily but emptily, jiggling without water pressure to hold it steady. Fingers clinging to the rough pebbly concrete, I would wait a few seconds, anticipating a perfect arc of cold water. I always believed that repair was imminent, that one day I would turn the handle and water would come out, but every day I was disappointed. The drinking fountain remained broken. Eventually, the metal bowl and handle disappeared, and people started stuffing their trash into the hollow concrete shell. I still didn't give up hope. But one day, the drinking fountain was gone. A tidy bed of bark mulch covered the scar below, and no outward trace of the fountain remained.

We moved to that neighborhood in 1986. The country was reverberating with Reagan-era disinvestment in the public sphere. The bottled water industry was becoming mainstream. And American distrust of the public sector was growing. Although I didn't connect my broken drinking fountain to the geopolitical events unfolding around me, I now know that it was a part of a much larger story.

Drinking fountains have exemplified the spirit of the times throughout their history. Every drinking fountain embodies a concept even as it provides water: ideas of beauty, wealth, temperance, municipal obligation, and environmentalism can be read through drinking fountains. Drinking fountains were installed in Renaissance Rome as public art glorifying the Pope and facilitating a tourist-friendly city, in industrial London as a humanitarian source of cholera-free water, in prohibition-era America to discourage alcohol consumption, and as a symbol of exclusion under Jim Crow laws. Innovations in bubbler technology responded to growing knowledge about germs. Humane societies gave joint fountains for humans and horses as new ideas about cruelty to animals became widespread. All along, their presence and persistence as an urban element reflects an acknowledgment of humans' most basic need.

Further, drinking fountains are a key indicator of cultural attitudes about the public good: do we care only for ourselves and our families, or do we pool our resources and work together to bring benefits to the entire community? Societies have wrestled with balancing these impulses throughout the history of the city. And drinking water access

is perhaps the most poignant way to understand where civilizations through the ages fall on this spectrum. Human bodies are 65% water - should we treat access to the very building block of life as a human right or as a commodity to be packaged and sold to those who can afford to pay? Good drinking fountains exemplify treating water, and by extension, ourselves, with dignity and respect. As a metaphor for social responsibility, the seemingly lowly drinking fountain shows the best or worst of a society. In this way, they can function as a window onto society's most fundamental values.

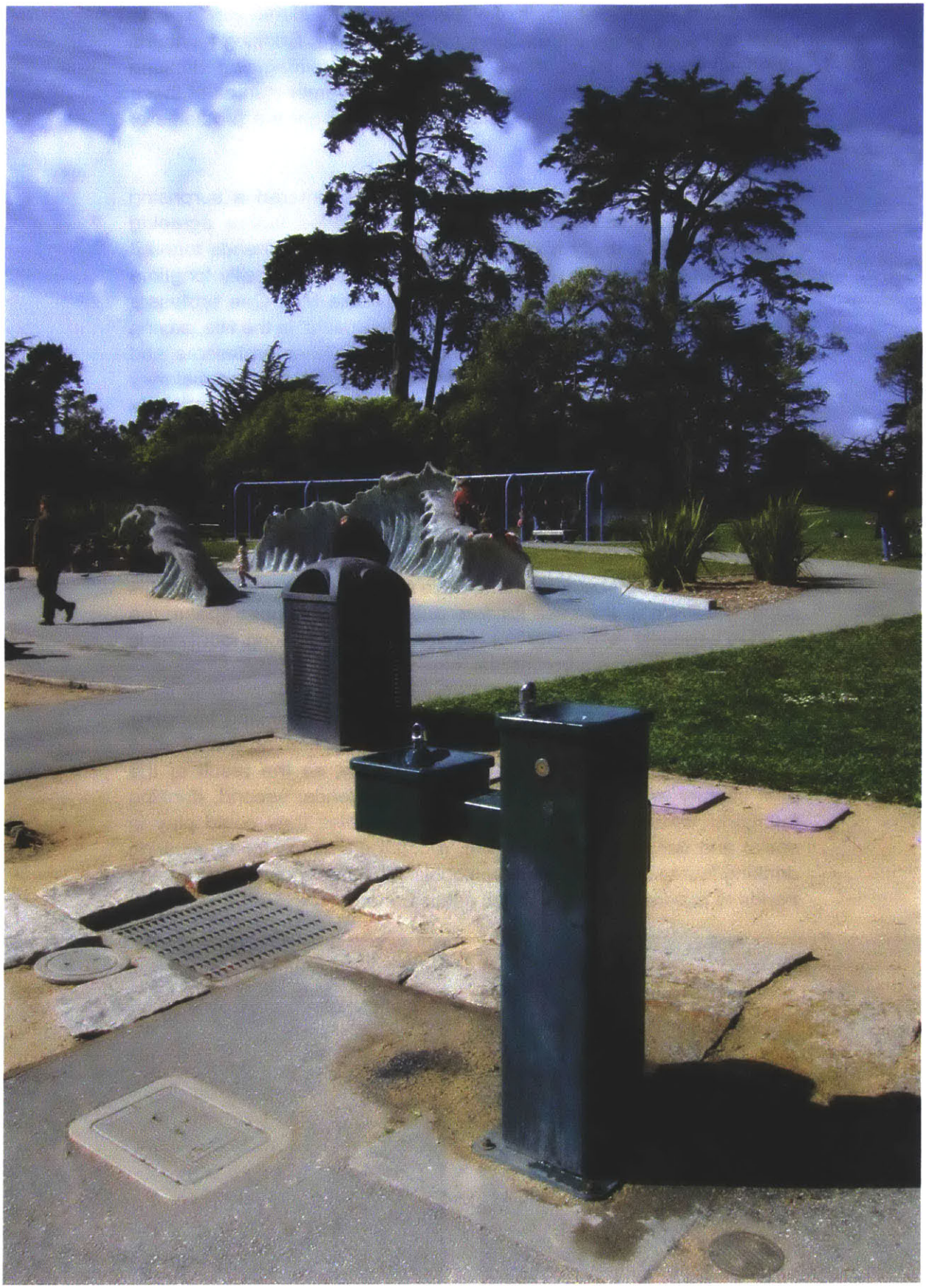
Tellingly, with the rise of privatization in the United States, drinking fountains have faded from the public realm as more people depend on privatized goods. And most drinking fountains in America, when installed at all, are purely utilitarian: undesigned in terms of both form and strategic urban placement. Many Americans express distaste or skepticism toward public water sources, reflecting underlying attitudes about distrust of government and public infrastructure. Drinking fountains have declined in America as part of a larger trajectory of infrastructural disinvestment, distrust in and privatization of public goods, and poor design of public space. Clean, cheap water has been one of the major achievements of modern western governments, yet there is a pervasive attitude that bottled water is safer than tap water, even though tap water in the US is actually tested to much higher standards. What impacts perceptions of safety and desirability? How can drinking fountains be situated within these larger sociopolitical and infrastructural questions to maximize their potential public benefit? Could better design and more public investment create a positive future for free public water and better social outcomes? This paper will examine both practical considerations, such as principles for siting and designing successful drinking fountains and drinking fountain networks, and larger conceptual questions of their overall role in the public realm.

Today, this country confronts a different set of challenges than the ones that shaped early fountain design. In health, over 30% of Americans are classified as obese; heart disease is the number one cause of mortality, and Type II diabetes has morphed from an adult disease to one affecting thousands of children. Consumption of sugar, especially from soda, has grown massively, and is explicitly linked with higher mortality rates. Inactivity is linked to these diseases, too, and 80% of Americans do not get recommended weekly amounts of exercise. The United States has experienced widespread privatization of formerly public goods. Poverty and homelessness continue to plague the country; 14.5% of Americans live below the poverty line, and up to 3.5 million Americans experience homelessness each year. Most American cities continue to languish as unpleasant places for pedestrians, dominated by cars and traffic, and local governments struggle to create unique and interesting urban spaces. The oceans are choking on plastics and carbon dioxide, as 10 billion gallons of bottled water are produced each year, and up to 95% of these bottles are not recycled. Plastic production for water bottles

burns about 17 million barrels of oil per year, as the planet continues to warm and experience catastrophic climate change. Drinking fountains alone can't solve all of these problems. But reimagining drinking fountains for today's world could lead to improvements in all of these areas: they may be uniquely suited to help confront the problems of 21st-century America.

Conducting my research for this paper, I encountered a surprising amount of laughter. Survey respondents chuckled before agreeing to participate in a study about drinking fountains. Old friends found it hilarious that I would a write a whole thesis about my silly longtime passion at a prestigious research institution like MIT. One professor advised me not to use the phrase "drinking fountains" in the title, saying that no one would take me seriously if I did. Other professors and classmates laughed, too - then told me earnestly about a time that they had been thirsty and there was nowhere to get a drink. Why do people find the subject of free public water – a major humanitarian achievement – humorous? Somehow, it's even funnier than other street furniture: would anyone have laughed about a paper on urban trash collection, bike rack placement, benches, street trees, or parking meters? Somehow, as cities have re-embraced many elements of public space design, drinking fountains, arguably the most visionary and universally useful of any streetscape element, have remained marginalized. In this paper, I will make the case for free public water in public space: the need to seriously reconsider our relationship with drinking fountains is a humanitarian and environmental imperative.

This paper will address the question of what role drinking fountains should play in public space in three main sections: first, an examination of the state of urban drinking fountains today, as the result of the past century and a half of drinking fountain trends; second, drinking fountains' various possible futures and the roles they could play in social and design goals; and third, recommendations for re-situating drinking fountains within larger sociopolitical, infrastructural and design trends to maximize their potential public benefit.



DRINKING FOUNTAINS TODAY

TYPICAL AMERICAN CITY

Drinking fountains' trajectory of decline has a consistent arc across the United States. In the past century, they've transitioned from luxurious public amenities to standard fixtures to expendable budget items to objects regarded with suspicion and fear.

The typical American drinking fountain provokes strong reactions. Despite their near invisibility in the public realm, everyone has an opinion about drinking fountains. To try to get a measurable handle on these attitudes, I surveyed 48 people in Sacramento, California, and 51 in Portland, Oregon, cities that still have drinking fountains in their downtowns. Using a random selection of people walking within 15 feet of a drinking fountain (there was some bias in approaching people who seemed to be in less of a hurry), I asked if they would like to participate in a survey about drinking fountains for my master's thesis. Between 50 and 75% of people consented to participate. After people filled out surveys, they would usually stick around to chat with me about drinking fountains for a few minutes. (See Appendix 1 for a copy of the survey.)

Conducting the surveys and talking with people in Sacramento revealed a dramatic split in residents' feelings. Many people have strong negative reactions to them based on other users: one woman who worked at the State Capitol told me she would never, ever drink from one of Capitol Park's drinking fountains, saying, "I've seen the homeless people bathing, people holding up their dogs for a drink." Another person told me, "The water's clean. It's the rest of it that's not!" A woman who declined to state her political affiliation thought they were a waste of taxpayers' money. Several people just made sour faces and told me drinking fountains were dirty and they never let their kids use them. The woman with the most emphatically negative reaction informed me that just the week before, she'd seen someone use the fountain as a urinal.

Other respondents had strong support for drinking fountains, but many did so while acknowledging perceived levels of danger. One woman expressed her laissez-faire attitude towards germs, saying, "I'm one of those moms who tells her kids, 'Go get a drink out of the hose.'" When asked if she would encourage a thirsty child to drink from a drinking fountain, an elementary school teacher told me, "I wouldn't have a child drink from the fountain because of the germs [they] might get when putting [their] mouth on the spout. I think the water itself is clean. I know how to use a drinking fountain without touching the spout." One man told me happily, "you might gets the shits, but you won't die!"

Others were more emphatically supportive of the need for public water, preferring it to its expensive cousin, bottled water. One man told me he was very likely to use a drinking fountain, saying, "I hate bottled water - it tastes like plastic!" Another woman wished that there were more, better maintained fountains, saying, "When I do find a drinking fountain, it usually doesn't work! I *hate* having to buy bottled water!" And another said that she relies heavily on carrying her own water bottle because of the cost of bottled water and the rarity of drinking fountains. In fact, when asked how often there was a convenient drinking fountain nearby, respondents in Sacramento gave a mean response of 2.5 on a scale of "1: rarely," to "5: usually." 2.5 is the ultimate equivocal answer – there might be a drinking fountain nearby. Nobody can reliably depend on drinking water that is available only occasionally.

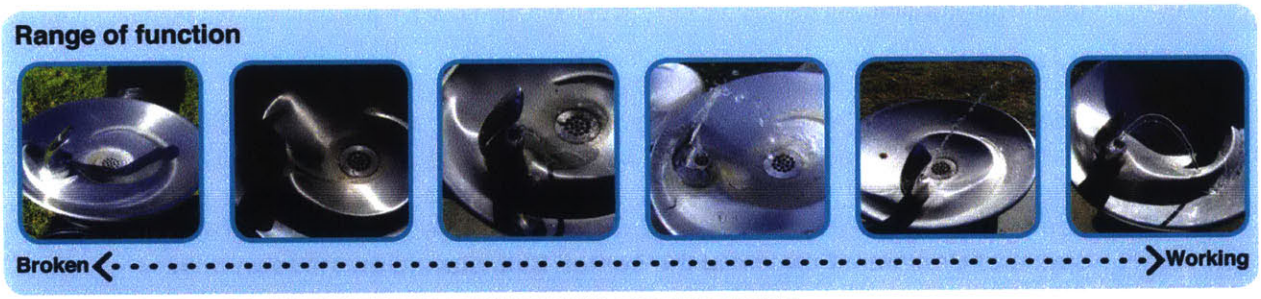
In downtown Sacramento's Capitol Park, the fountains match the light posts, trash cans, benches, bollards, and all the site furnishings. Twelve embellished powder-coated black bases with stainless steel bowls have been installed within the last ten years in the nine acre park. Made by Haws, one of the leading drinking fountains manufacturers in the country, these fountains are called Barrier-Free Aluminum Pedestal Fountains and are described on the Haws website as, "antique historic style, heavy-duty cast aluminum pedestal drinking fountain with

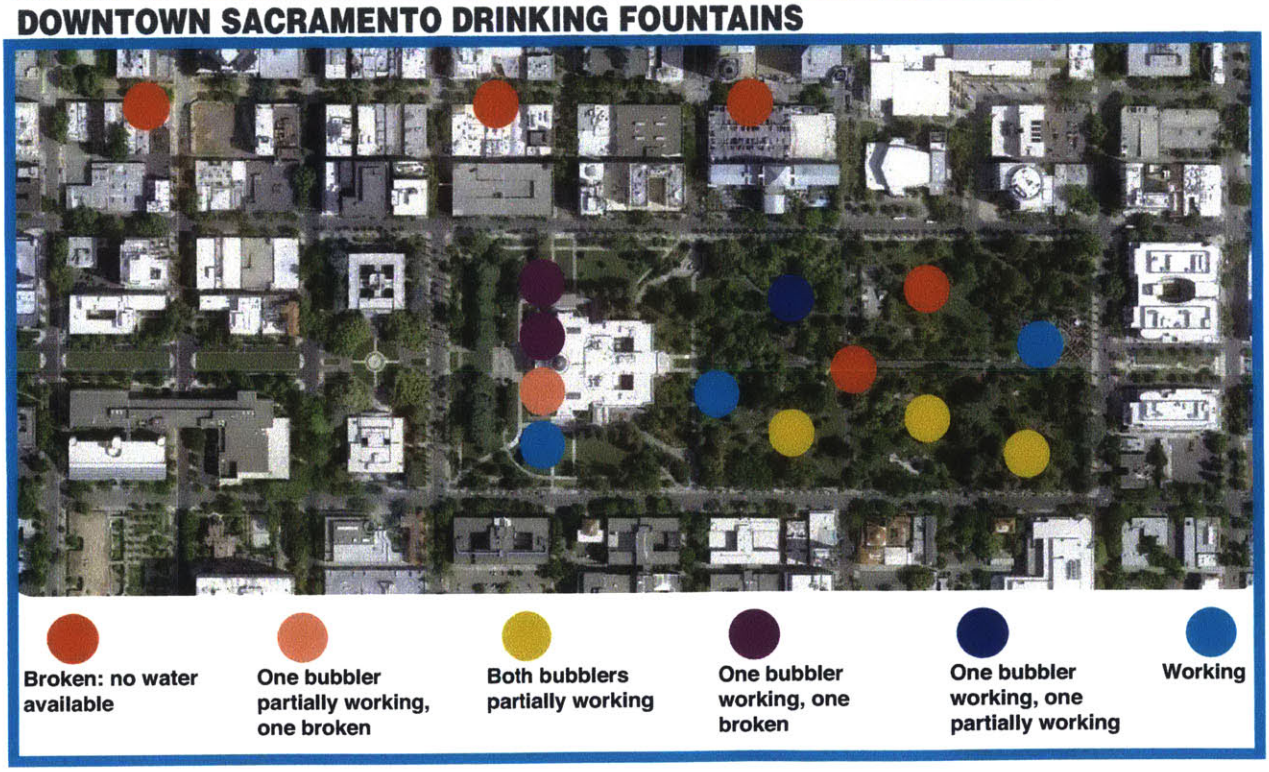
Capitol Park Fountain, Sacramento, CA

black powder-coated finish"[1] They cost $5,160 apiece[2], priced at the higher end of the standard drinking fountain spectrum (a minimally-embellished model costs around $3,000), and are some of the nicest fountains that can be ordered standard. And yet, in one of the best-groomed downtown parks in California, after clear investment in good drinking fountains, only three of the twelve fountains work as intended. Two are broken altogether, and the other seven are in various states of disrepair, with either one or both of their bubblers broken, dribbley, or overshooting. One block away, the formerly pedestrian-only K Street has well-used light rail lines, and the three drinking fountains roughly correspond with the light rail stops, but all three are broken or shut off. So within 20 urban blocks, there are fifteen drinking fountains, but only three work as intended. In the rest of the downtown, the only drinking

1 "Historic Drinking Fountain," Haws Corporation website. http://www.hawsco.com/historic-drinking-fountain

2 Dennis O'Neill, sales representative for Haws Corporation, e-mail message to author, February 17, 2015.





fountains are found in urban parks, including one in Freemont Park and two in Roosevelt Park.

Poor maintenance is practically built into our current drinking fountain landscape. According to the New Yorkers for Parks 2007 report, Central Park's 150 drinking fountains are "plagued by maintenance, safety, and structural challenges. Even when drinking fountains provide water with sufficient pressure, users frequently find trash, mold, and severe leaks."[3] No wonder people express disgust and skepticism. How have we gotten here?

A typical city in the United States has layers of drinking fountains in various states of disrepair. Conceived of as singular objects, related to specific places or projects, maintained by parks departments or groundskeepers, abandoned or partially maintained, they reflect changing ideas about where free water should be, what a drinking fountain should look like, and who should pay for it. The typical city has four main layers of public water, built in four different eras of drinking fountain thought: monumental, rationalist, privatized, and environmentalist.

MONUMENTAL

The oldest layer, monumental, can still be read, though not tasted, in North Beach neighborhood's Washington Square. One of San Francisco's oldest public spaces, the block-sized square with a big open lawn, small playground, and decorative edge trees has an 1879 statue of Benjamin Franklin in the center. Kids playing on the lawn take no notice of it, but looking closer, the granite base has plugged up water openings on three of its four sides. Plaques on the ground around the former fountain read, "Welcome." An inscription on the back reads, "Presented by H.D. Cogswell to our boys and girls who will soon take our places and pass on."

Henry D. Cogswell, a dentist from Connecticut, came to San Francisco during the gold rush and invested heavily in real estate and mines.[4] He began donating drinking fountains to cities around the country in the 1870's: supposedly, he wanted to install one fountain for every 100 saloons in the United States to discourage alcohol consumption.[5] A San Francisco newspaper quoted him as saying:

> "They say I'm a temperance crank. I'm not. I'm not identified with

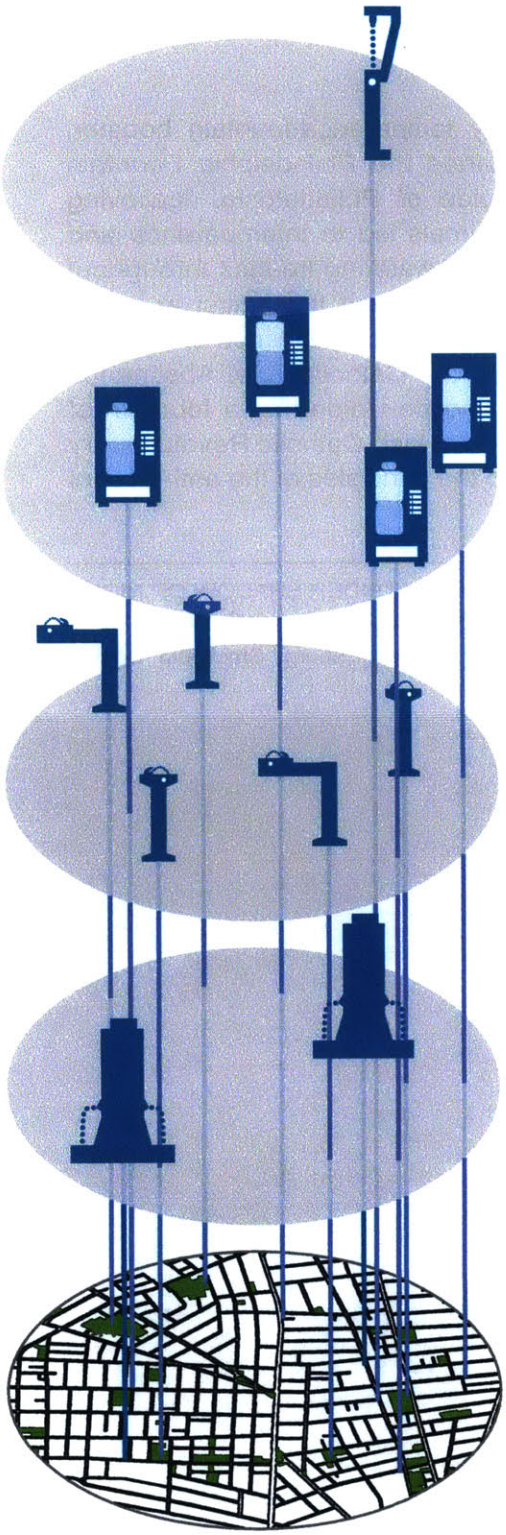
---

3 Peter H Gleick, *Bottled and Sold: The Story Behind Our Obsession with Bottled Water* (Washington: Island Press, 2010), 107.

4 "The Founding and History of Cogswell Polytechnical College," Cogswell Polytechnical College website, accessed February 13, 2015. http://web.archive.org/web/20070609130631/http://www.cogswell.edu/historicalOverview.html

5 Lee Foster, "Town Plans To Restore Fountain As Part Of Park Project," Rockville, CT website, April 6, 2004. Accessed February 13, 2015. http://rockvillect.org/Cogswell/fountain.htm

DRINKING FOUNTAIN LAYERS OVER TIME



ENVIRONMENTAL

pollution mitigation

education

PRIVATIZED

disinvestment

privatization

RATIONALIST

recreation infrastructure

utility

MONUMENTAL

philanthropy

public art

health

temperance

> any temperance Society or organization, but I do believe in it, and furthermore I do not believe in people being compelled, whether they wish it or not, to go into a saloon to slake their thirst. In every city of the Old World I saw fountains dotted about, and particularly to the poor I believe them to be a necessity. I have tried to benefit the city and the class in which I am particularly interested —the very poor."[6]

Cogswell was by no means the only temperance-fountain booster. In 1869, Dr. Wilson Cary Swann started the Philadelphia Fountain Society. According to a fountain guide of Philadelphia, "believing that lack of water for workers and animals led to intemperance and crime, the society provided fountains and watering troughs throughout the city and park so that workers could quench their thirst in public instead of entering local taverns."[7] The Catholic Abstinence Union also gave a huge fountain in Philadelphia, the Catholic Total Abstinence Fountain: "it was thought by the Abstinence Union that a fountain of water surrounded by statues of prominent Irish Catholic Revolutionary Heroes would be a lasting memorial to the principles of the anti-alcohol

---

6 "Image breakers. Dr. Cogswell's Statue Overturned UNDER SHADOW OF NIGHT By a Silent Gang of Hoodlum Miscreants." *The Morning Call*, January 3, 1894.

7 Jim McClelland, *Fountains of Philadelphia* (Mechanicsburg: Stackpole Books, 2005), 6.

Washington Square Fountain, San Francisco, CA

Washington Square Fountain, San Francisco, CA

movement and of the patriotism of the Irish in America."[8] An 1891 stone fountain in downtown Petaluma, California is inscribed with the words, "total abstinence is the way to handle the alcohol problem." But reading between the lines, class judgments are extremely evident in these gifts from the wealthy to the poor. In these public-benefit monuments, there was a hazy line between philanthropy and propaganda.

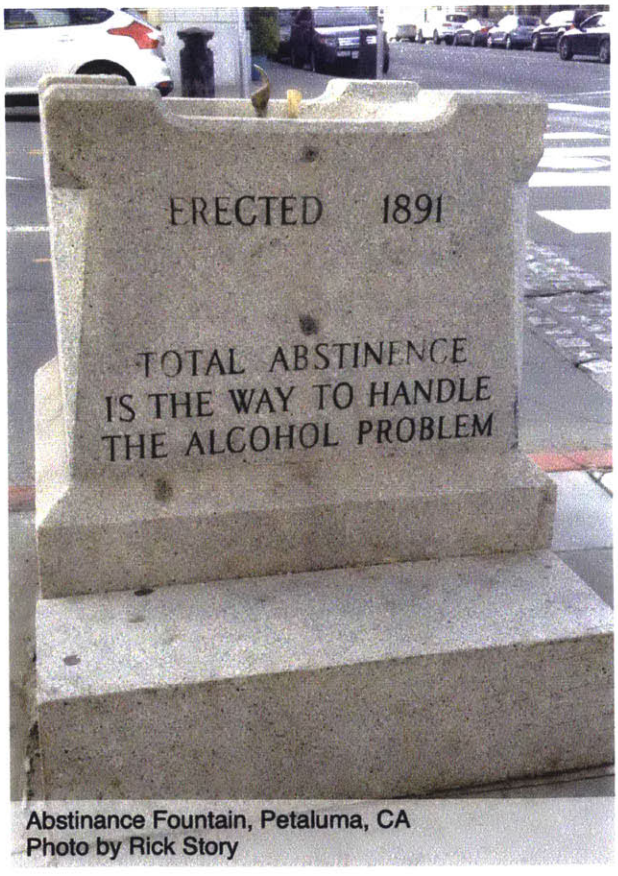
A temperance agenda was not the only impetus for installing public drinking fountains in the late 19th century United States. Philanthropists were heavily influenced by humanitarian movements in England. Rapid industrialization had left London water filthy and unsafe to drink. Those who could afford it bought water from water delivery companies, but that water was usually collected from the same places in the Thames where sewers emptied. Those who could not afford delivery gathered their own water from the polluted river (described as an effluent of sewage, garbage, and human and animal carcasses) or from similarly polluted wells, such as the one responsible for the 1854 cholera outbreak.[9] It is no wonder that most people eschewed water for alcohol. Beer, cider, and gin were much safer and tastier to drink, but constant consumption

---

8 Jim McClelland, *Fountains of Philadelphia* (Mechanicsburg: Stackpole Books, 2005), 16.

9 Phillip Davies, *Troughs & drinking fountains: fountains of life* (London: Chatto & Windus, 1989), 8.

Catholic Abstinance Fountain, Philadelphia, PA
Photo from *Fountains of Philadelphia*



Abstinance Fountain, Petaluma, CA
Photo by Rick Story

The first drinking fountain built by London's Metropolitan Drinking Fountain Association in 1859 opened to "scenes of public rejoicing." Image from the Metropolitan Drinking Fountain Association's website.

led to rampant alcoholism.[10]

In 1859, a group of radical philanthropists founded the Metropolitan Drinking Fountain Association. Their first fountain opened in London that year to "scenes of public rejoicing."[11] The Archbishop of Canterbury's daughter took the inaugural drink from the attached cup, showing that this was not just an alm for the poor. The water was cold and fresh, brought from outside the city via pipes, and continuously flowing – and this water would be for everyone. Well-summed up by Howard Malchow, the fountain's "message was one of temperance, religion, social peace and class collaboration: the poor and the peasant may meet to drink at the same fountain."[12]

The Royal Society for the Prevention of Cruelty to Animals had also become very active around this time, as populations of working animals within the city – oxen and horses – exploded. In 1867, the two organizations joined forces to become the Metropolitan Drinking Fountain and Cattle Trough Association. English fountains frequently used the water twice, once as an arc jet or spigot for people to drink from, with the runoff going to a trough for animals. An engraving from the time shows humans, horses, cattle, and dogs all drinking from the

---

10 Sharon V. Salinger, *Taverns and Drinking in Early America* (Baltimore: JHU Press, 2004), 3-6.

11 Phillip Davies, *Troughs & drinking fountains: fountains of life* (London: Chatto & Windus, 1989), 13.

12 Phillip Davies, *Troughs & drinking fountains: fountains of life* (London: Chatto & Windus, 1989), 23.

Clean urban water sources for all of "God's creatures." Image from the Metropolitan Drinking Fountain Associations's website.

same fountain. This great democratizing idea, that clean, free public water would benefit all urban species, feels especially powerful when imagining the alternative: a city pickled by alcohol and parched by polluted waters. Drinking fountains of this time were powerful symbols of renewed health and purity. As such, many of their greatest proponents were members of the church and of the temperance movement. In the beginning, the English fountains were given by people with strong beliefs. As time went on, the idea became more and more mainstream – seen as an obvious good – and took root within more conservative circles as philanthropy.[13]

Picking up on these ideas, in May of 1859 a *New York Times* editorial called for drinking fountains as a humanitarian necessity:

> "A society has recently been organized in London for the purpose of supplying that beer-imbibing City with drinking fountains... placed within the reach of all the wayfarers of its interminable streets. In New York, which is the best-watered City in the world, where the weather is generally dry, the heat often oppressive, and the dust always choking, there is not a public drinking fountain supplied with a cup, where the stranger may clear his throat and slake his thirst, from High Bridge to the Battery. There are a few ornamental fountains, but they are carefully railed around so that they cannot be approached, and the jet throws up its sparkling column of liquid brilliants in the center of a stone basin, to which access is denied by the public authorities. There should

13 Phillip Davies, *Troughs & drinking fountains: fountains of life* (London: Chatto & Windus, 1989), 22.

> be at least a thousand drinking fountains scattered over the City, supplied with cups for the use of the wayfaring public; and these fountains...might be rendered at a very trifling expense highly ornamental, and in the highest degree beneficial. They would, it is true, be the ruin of hundreds of drinking saloons where bad liquor is sold, and that may be one reason why the City has not supplied them.... With the salt water flowing all around us, and fresh water running through all our streets, there is not a place where one of our dirty, thirsty and worried citizens can either bathe his person or quench his thirst free of charge. As the hot weather will soon be upon us, it is about time that our City Fathers took these things into serious consideration."[14]

This article contains a few notable points. First, the reader learns that, unlike London, New York City already had water pipes running under all of its streets, providing fresh water to private homes and businesses. Thus, the people who would benefit from public fountains were not residents in their homes, but the people out walking, the "wayfarers." These users would presumably fall into three main groups: those out for pleasure, those with business, and the destitute, those with no other choice. In this context, the word "stranger" means someone without a home or business nearby. Second, the author makes the point that for a "trifling expense," the fountains could be decorative art, adding to the beauty of the city. Third, the author notes that ornamental fountains exist, but are inaccessible for drinking, implicitly noting a higher value placed on art than on humanitarian concerns, which was enforced by city authorities. Lastly, and crucially, they observe that drinking fountains should be considered as a network, that there should be "at least a thousand" throughout the city. In light of their use by strangers and wayfarers, there is an implication that people should have access to water wherever they go.

A month later, the *New York Times* reported that the Croton Aqueduct Board had erected a public drinking fountain in the park, drawing "crowds of people." The article goes on to express the hope that "public drinking fountains in this City will soon be so numerous that they cease to be the subject of remark."[15] Twenty years later, in 1880, however, such an exquisite fountain was donated that the *Times* described it at length:

> "The new and beautiful drinking fountain now in the course of erection at the intersection of Madison Avenue and Twenty-Third Street is the gift to New York of Miss Olivia Phelps Stokes, daughter of Mr. James Stokes, of this City...the public cannot fail to be grateful to the donor of a gift like this, which is not only a benefaction, but beautiful as a work of art, and Miss Stokes may feel assured that her name will be held in pleasant regard

---

14 "Drinking Fountains," *The New York Times,* May 6, 1859.

15 "City Intelligence: A Public Drinking Fountain in the Park," *The New York Times*, June 11, 1859.

> by all whose eyes are attracted to its beautiful form. The height of this work is 11 feet above the pavement. It is triangular in form two sides are given to capacious horse-troughs, while the third is devoted to the use of thirsty humanity....Carved radiating consoles separate the three sides from the string course, above which rise columns, the shafts being of polished porphyry, Over the entablature of these columns rise carved dolphins, reposing up in the angles of the triangular dome, and terminating with the finial. The horse troughs receive water from the mouths of twin dolphins, and the drinking fountain from a foliated shell. The cost exceeded $6,000."[16]

At Madison Square, the drinking fountain doubled as an admired piece of public art. Aligned with emerging ideas about the importance of a beautiful public realm, the fountain was both a monument in the city and a functional humanitarian object.

Another female philanthropist gave what is probably San Francisco's oldest remaining fountain: Lotta's Fountain, located downtown on Market Street. Lotta Crabtree was a dancer during the Gold Rush - according to the guidebook *Fountains of San Francisco,* she made her fortune, "dancing on barrel tops in waterfront saloons amidst the wild Barbary Coast," while, "miners showered [her] with gold nuggets, gold dust, and silver dollars." With some of these earnings, she donated the cast iron fountain to the city, at a total cost of $8,475. (At the fountain's opening ceremony in 1875, "hoodlums," who had expected something better to drink than water, started a small riot.) Today, the fountain is dry, and just looks like another city monument. Its tin drinking cups, attached by chains near the griffin-head spouts, are long gone, and, as the author of *Fountains of San Francisco* balefully notes, "its function has been denigrated to that of a sometimes refuse bin, an occasional meeting place, and as an interesting monument along a busy downtown street."[17] Private cafes and CVS stores selling bottled water have taken over its former function.

As noted earlier, Cogswell's Washington Square fountain in San Francisco has met a similar fate. Topped with Benjamin Franklin, it is one of seven fountains Henry Cogswell gave to the foggy city.[18] It seems to be the only one of the seven remaining – perhaps because of its innocuous statue subject. Many of Cogswell's other fountains, reputedly designed by Cogswell himself, were topped with statues of him holding a glass of water in one hand and a temperance pledge in the other, and many of these were unceremoniously dismantled by the

---

16 "Drinking Fountain in Madison-Square," *The New York Times*, December 8, 1880.

17 Bernard S. Katz, *The Fountains of San Francisco* (San Francisco: Don't Call It Frisco Press, 1989), 12-14.

18 Lee Foster, "Town Plans To Restore Fountain As Part Of Park Project," Rockville, CT website, April 6, 2004. Accessed February 13, 2015. http://rockvillect.org/Cogswell/fountain.htm

public. One, at the intersection of California and Kearny Streets in San Francisco, was pulled down with a rope one New Year's Eve.[19] Another, in Rockville, Connecticut, wound up in the lake more than once. And the *New York Times* reported that Cogswell's statues were being ripped down by cities all over the country as a revolt against "bad sculpture:"

> "We have now to note a popular uprising against dismal and horrific effigies perpetrated at large expense by men and women for whom the wooden Indian of a cigar store is a task beyond their skill. The Cogswell fountains are first to go. Boston took in its Cogswell fountain some time ago and the city of that philanthropist lately perceived the statue of the good Doctor tumbled from its perch with an apathy that cannot be too much reprehended."[20]

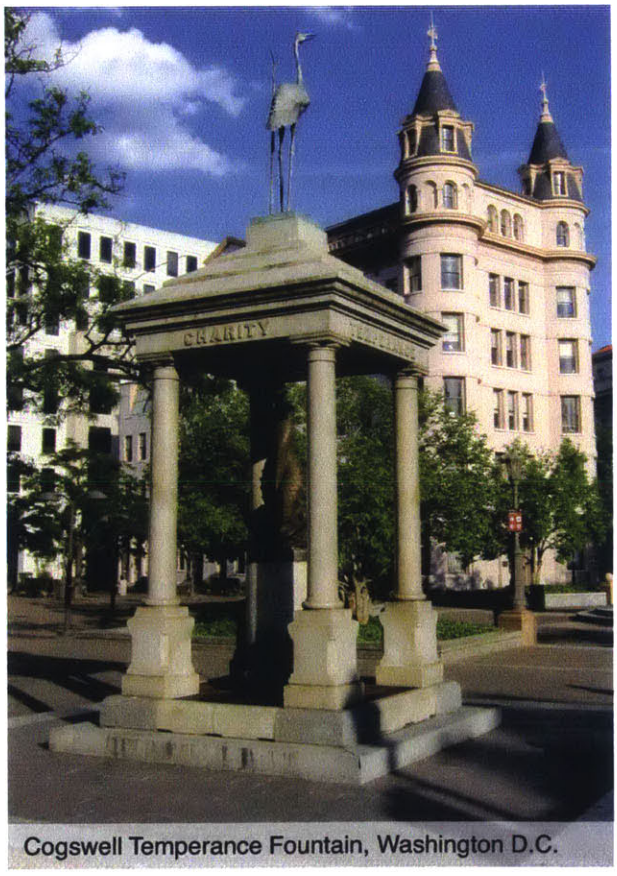
According to contemporary Rockville, Connecticut resident Anthony Vecchiarelli, "The gift was seen as self-promoting egoism. Who was this millionaire doctor from San Francisco, sending this statue of himself...

---

19 "Image breakers. Dr. Cogswell's Statue Overturned UNDER SHADOW OF NIGHT By a Silent Gang of Hoodlum Miscreants." *The Morning Call*, January 3, 1894.

20 "Weeding out bad sculpture." *The New York Times*, March 13, 1894.

Lotta's Fountain, San Francisco, CA



Cogswell Temperance Fountain, Washington D.C.

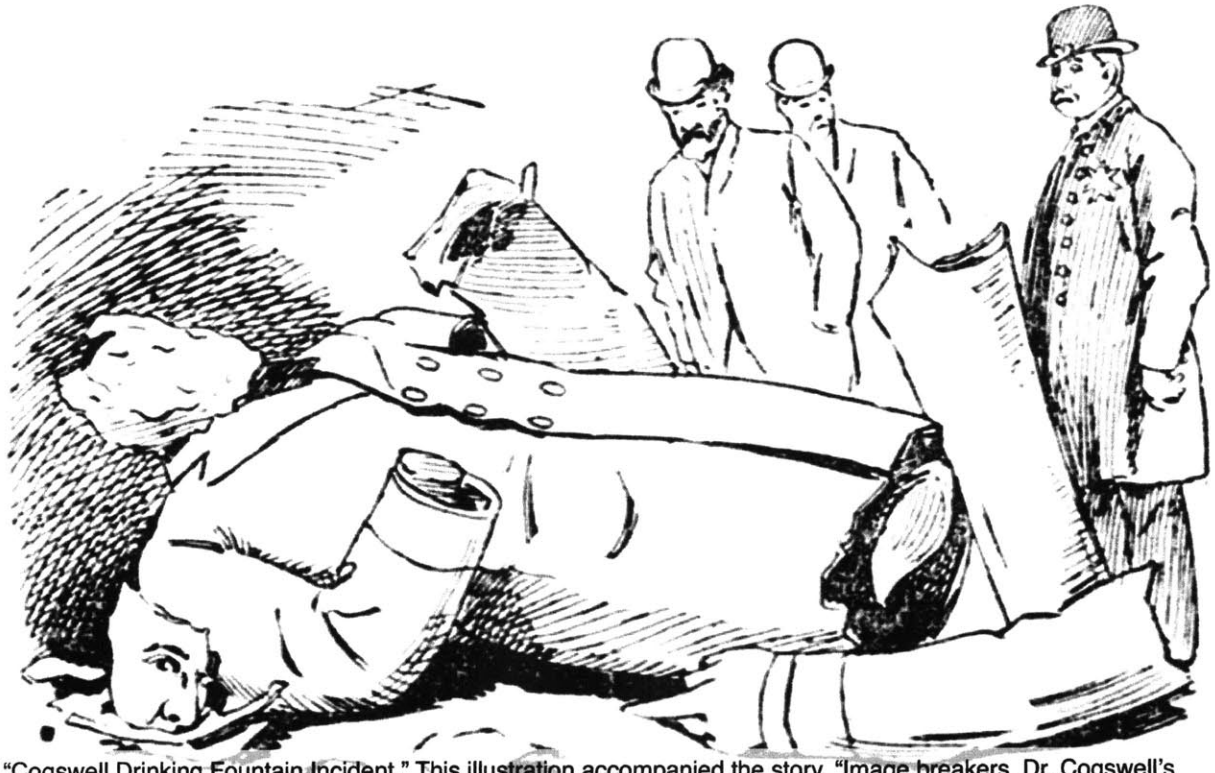
telling us what to drink?"[21]

One of the few other remaining Cogswell fountains is in Washington, D.C., emblazoned with words about temperance, but topped with a heron. Like the Washington Square fountain, its water was shut off long ago. While Ben Franklin and the heron were perhaps deemed inoffensive enough to remain public monuments, their real functionality ended when the city stopped water service. These and other monumental fountains have been preserved and given historic status, but this is usually in form only. As geographer and historian David Lowenthal has written, artifacts are privileged in historic preservation without the accompanying ideas.[22] Keeping a carved piece of stone in the street without its accompanying function – providing safe, clean water – denies the purpose and form of the original. Local preservationists have succeeded in keeping many of the objects themselves, but ideas about saving water and about preserving a "pure" object have often led to water being turned off entirely rather than retrofitting the fountain with an on/off switch or button. Cogswell's remaining gifts to give

---

21 Jessica Ciparelli. "Back where he belongs: Dr. Henry Cogswell statue once again graces Rockville's Central Park." Rockville, CT website. Accessed February 13, 2015. http://rockvillect.org/Cogswell/dedication.htm.

22 David Lowenthal, "Material Preservation and Its Alternatives" *Perspecta* 25 (1989), 66-77.



"Cogswell Drinking Fountain Incident." This illustration accompanied the story, "Image breakers. Dr. Cogswell's Statue Overturned UNDER SHADOW OF NIGHT By a Silent Gang of Hoodlum Miscreants" in the *San Francisco Call*, 1894.

people, especially the poor, a free, safe, non-alcohol drinking source, have become non-functional ornaments. Almost invisible in the urban landscape, they are now artifacts of old ideas.

RATIONALIST

There are two newer drinking fountains in San Francisco's Washington Square Park, attached to the restroom at the playground, bringing us to the second layer of a typical city's drinking fountains. As piped water became ubiquitous in homes and offices, urban streetscape fountains faded as fashionable philanthropic monuments. Instead, drinking fountains transitioned into small, utilitarian objects, mostly positioned indoors in semi-public spaces such as libraries and civic buildings and outdoors in parks. Cars began to dominate the streetscape and plazas faded from US conceptions of public space – now, neighborhood parks were public space. These rationalist park fountains are often closely linked to playgrounds and sports fields, where it's easy for park designers to imagine their necessity and functionality. They are non-sculptural and inoffensive, metal or concrete, and absolutely utilitarian.

According to Galen Cranz, author of *The Politics of Park Design*, the mid-20th century saw a shift in public park design from romantic places to relax to useful, functional places for vigorous physical activity. Beauty was no longer the goal – now, baseball diamonds and

A lonely artifact of the monumental drinking fountain era. Cogswell Washington Square Fountain, San Francisco

playgrounds filled public spaces. Instead of the grand Central Parks of the late 19th century, American cities built smaller parks embedded into neighborhoods, packed with programmed spaces. Miasma theory had been replaced by germ theory, resulting in less public demand for vast swaths of tree-filled air filters. According to Cranz,

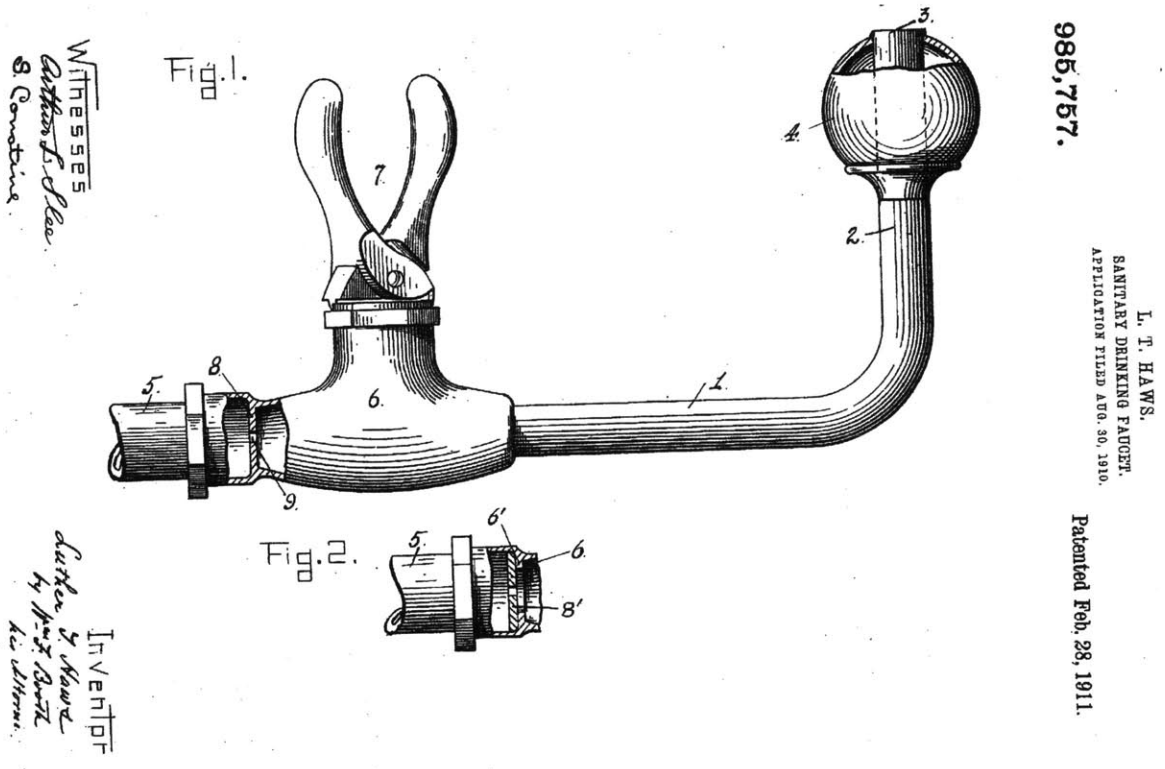
> "The real design innovation of the era was standardization of all the old elements into a basic municipal package, one that was used repeatedly, without regard to local site conditions. Parts, materials, and procedures were reduced to a minimum....What has been called the parkway picturesque, the lawn and spotting of trees and shrubs here and there... was merely a blend of minimal standards of appearance and a desire to keep maintenance and supervision costs to a minimum."[23]

By the 1930s, one of the standard elements for these rational parks was a drinking fountain. With simple, unadorned forms, the new minimal drinking fountain models fit right into this conception of park space.

While monumental fountains had been basic downward spigots with

---

23 Galen Cranz, *The Politics of Park Design: A History of Urban Parks in America* (Cambridge: The MIT Press, 1982), 122-123.



Luther Haws' patent drawing for "Sanitary Drinking Faucet." 1911.

cups, knowledge about germs began to lead to innovations in drinking fountain forms. In 1906, Luther Haws invented the upward bubbler after he grew concerned about the spread of yellow fever.[24] Within a few years, the innovation was widespread, and by the late 1910s, the bubblers were tilted sideways to deflect saliva and used water, in the common drinking fountain arc we see today. By the 1920s, manufacturers had started adding mouth guards, small shields to prevent users from putting their mouths directly on the spout. Early mouth guards were wire loops, and they soon morphed into the solid metal, usually stainless steel, that are standard on almost every drinking fountain today.

Drainage mechanisms also became standard on the rationalist drinking fountains. A center drain in the drinking bowl connects to a sanitary sewer hookup – drinking fountain runoff joins a city's black water, and is treated and discarded (alternatives to this practice will be discussed in the Recommendations section).

Once the basic form of the tilted, upward jet with a mouth guard was established, the form of the standard American drinking fountain changed little from 1920 to today. The only major exception was the passage of the Americans with Disabilities Act in 1990, leading to the requirement

---

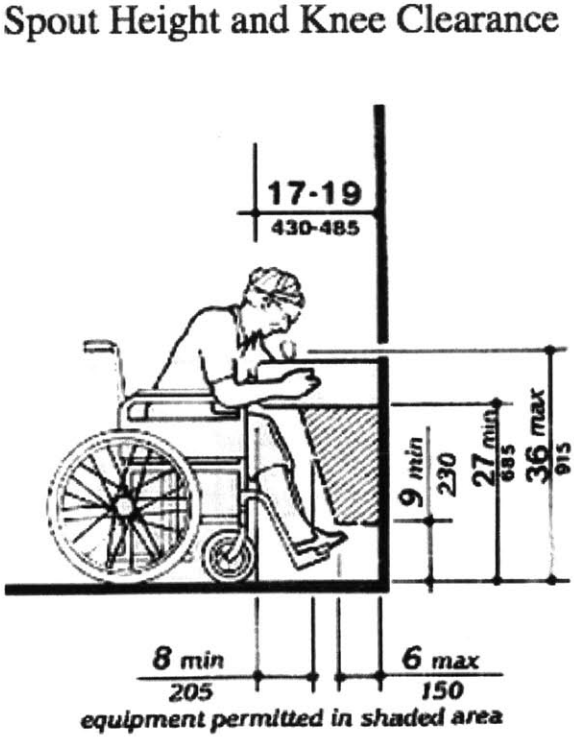
24 "Company History," Haws Corporation website, accessed April 16, 2015. https://www.hawsco.com/our-story/company-history/

K-5550-G "Concord"

KOHLER Vitreous China Wall Drinking Fountain Round Bowl

Early Kohler fountain.

Puro Liberty Fountain advertisement, emphasizing a mouth guard and sloping stream.



Americans with Disabilities Act drinking fountain compliance. Image from ada-compliance.com

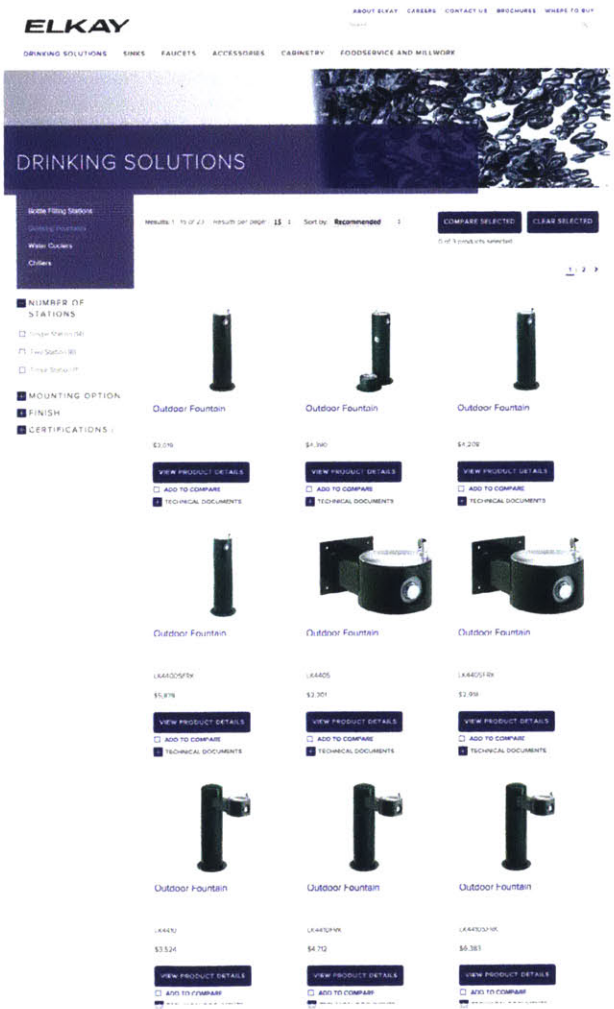
that drinking fountains accommodate wheelchair users, bending the standard cylindrical fountain into an 'L' shape. The law requires knee clearance of at least 27" and a spout no higher than 36".[25] Where two or more bubblers are provided, just one of the fountains must meet this guideline, making it common to see one bubbler at this level, which is also accessible to children by age six, and one taller bubbler, requiring less bending by standing adults. Over time, standardized add-ons such as a jug filler spigot on one side or a dog bowl with its own button have also become common.

Ornamentation on these fountains has been extremely limited. Keeping with the utilitarian attitudes of park managers, the drinking fountain pedestals are commonly made of either powder-coated steel or exposed-aggregate concrete. Earlier fountains were often made of ceramic,

---

25 "4.15 Drinking Fountains and Water Coolers," ADA Compliance website, accessed April 16, 2015. http://www.ada-compliance.com/ada-compliance/drinking-fountain-water-coolers.html

Drinking fountains available for sale from Most Dependable Fountain's website.

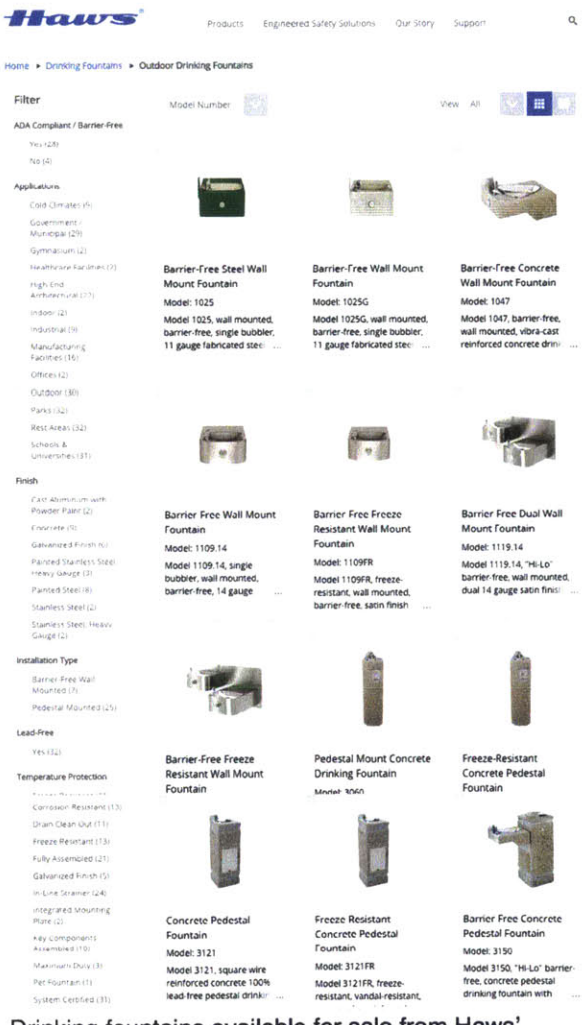


Drinking fountains available for sale from Elkay's website.

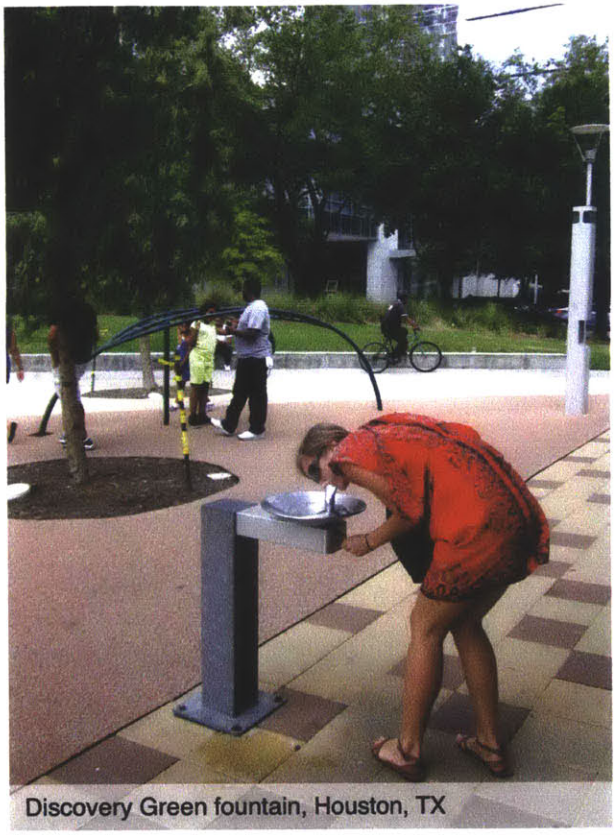
but concerns about durability and dirt visibility have made ceramic fountains extremely rare today. The most prominent manufacturers of outdoor drinking fountains today, Most Dependable Fountains, Haws, Elkay, and Halsey Taylor, all offer the same basic designs, with one- and two-bowl bubblers available in exposed-aggregate concrete or in up to sixteen standard powder-coated colors. Models are designated as "modern" or "traditional," but there is very little difference in style or form. All use minimal materials selected for maximum durability, and none suggest a style or design aesthetic. More design-focused street furniture manufacturers, including Forms+Surfaces and Landscape Forms, commonly specified by leading landscape architecture firms for "nice" projects, do not manufacture drinking fountains at all.

An interesting side effect of utilitarian drinking fountain design is that styles have been layered close to each other with little regard for consistency. One example of this type of perception of fountains as individual objects rather than a system can be seen in Sacramento's Howe Park. Built around 1950, the park has eleven different public

Drinking fountains available for sale from Halsey Taylor's website.



Drinking fountains available for sale from Haws' website.



Discovery Green fountain, Houston, TX

Gough Park fountain, San Francisco, CA
Photo by Liviu Ivanov

Golden Gate Park fountain, San Francisco, CA

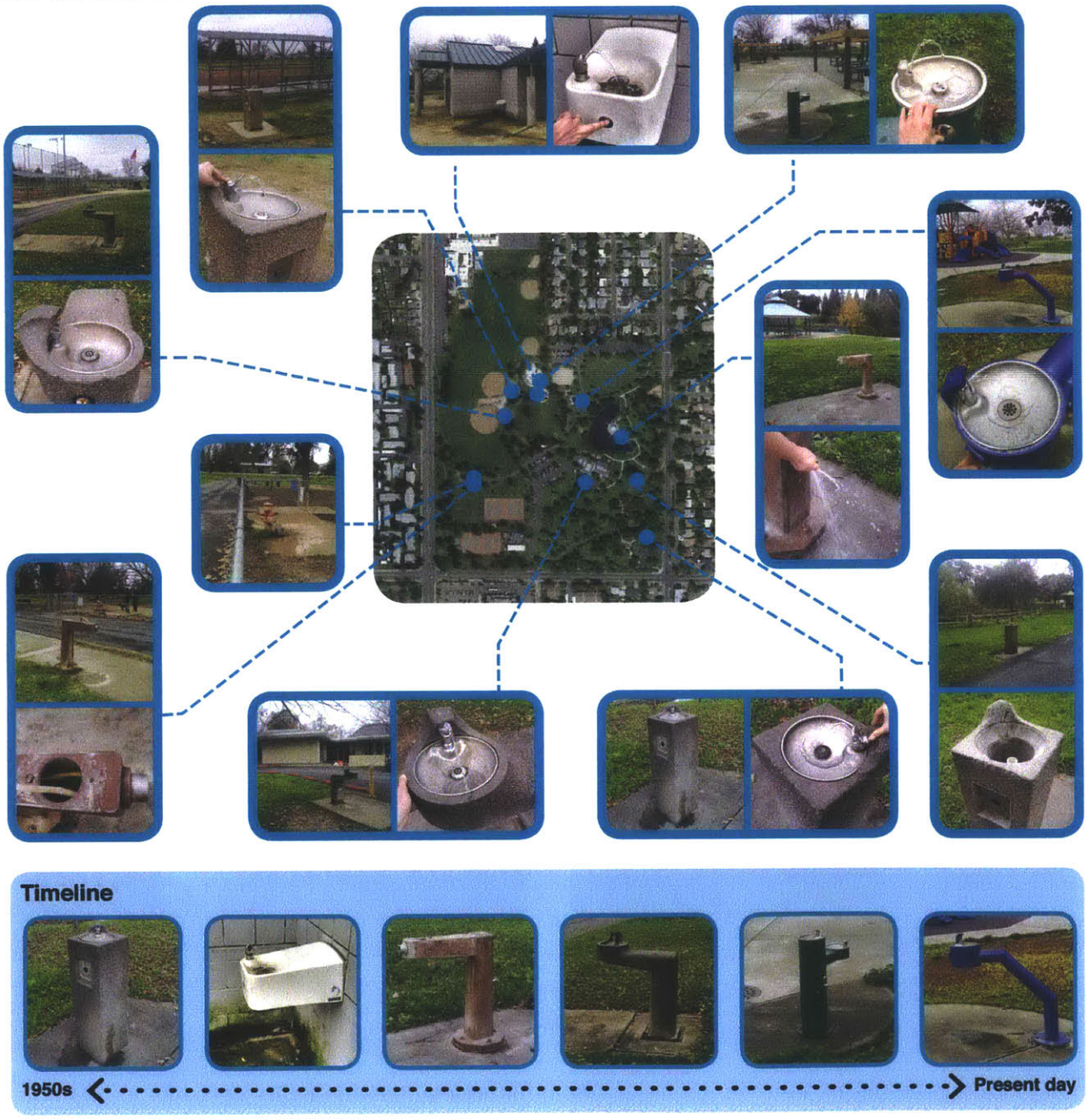
Conservatory of Flowers fountain, San Francisco, CA

Minuteman Trail fountain, Arlington, MA

Kerry Park fountain, Seattle, WA

water sources within its fifty acres: ten drinking fountains and one hydrant-shaped spigot inside the fenced dog area. Among the ten drinking fountains, of which three are broken, there are six different types, likely installed in different eras of the park. The earliest ones are located along major paths. Later ones are associated with the baseball diamonds and wall-mounted at the park restroom, and the newest are associated with the picnic area and with a new young children's playground. The fountains were obviously thought of as single objects, installed in conjunction with new projects within the park and without understanding them as a network.

HOWE PARK DRINKING FOUNTAINS



Most drinking fountains installed today are still in line with the rationalist fountain school of thought. They are low maintenance, utilitarian, and simple, closely associated with recreational facilities, and almost entirely absent from the non-park urban landscape. But despite the fact that cities continue to install these fountains, many existing and older ones just don't work. Underfunded maintenance departments are a hallmark of the next layer of public water thought, the privatized.

PRIVATIZED

The 1970s and 1980s saw a worldwide loss of faith in representative democracy. In the Reagan era, widespread government cutbacks reflected a global decline in the idea of the state as a provider.[26] Increasingly, public facilities began depending on private funding for survival, cutting back on maintenance and on amenities. Drinking fountains were high on the list of cutbacks. Schools and other public facilities began making lucrative deals with soda companies, leading to a growing presence of vending machines and a perverse incentive to minimize drinking water access.

> "Many US schools rely on revenue from beverage sales and advertising as a discretionary funding source for school activities. Companies have exclusive contracts with schools to advertise and sell a single brand of beverages. These contracts often allow companies to market their products through logos on vending machines, sponsorship of athletic teams, distribution of branded paraphernalia, or multimedia advertisements. Of the nearly $186 million spent on school food and beverage marketing in 2006, marketing expenditures were highest for carbonated beverages. As such, schools may fear revenue loss if they remove sugar-sweetened beverages from vending machines and ban junk food marketing. In a California study, stakeholders frequently cited decreasing revenue from competitive beverage sales as a barrier to increasing the availability of water in schools. Also, school officials may believe that contracts with beverage companies to sell bottled water prohibit them from offering free drinking water. In addition, schools that rely on bottled water sales for profits may be reluctant to offer free drinking water. Although it is unlikely that vending agreements prohibit schools from offering free tap water to students, schools that have bottled water vending contracts may be forced to offer free bottled water of the brand specified in the contract."[27]

Simultaneously, the bottled water industry started growing, creating a two-front attack on drinking fountains. Advertising played on growing

---

26 M Bevir. Democratic Governance (Princeton, NJ: Princeton University Press, 2010), 26-31.

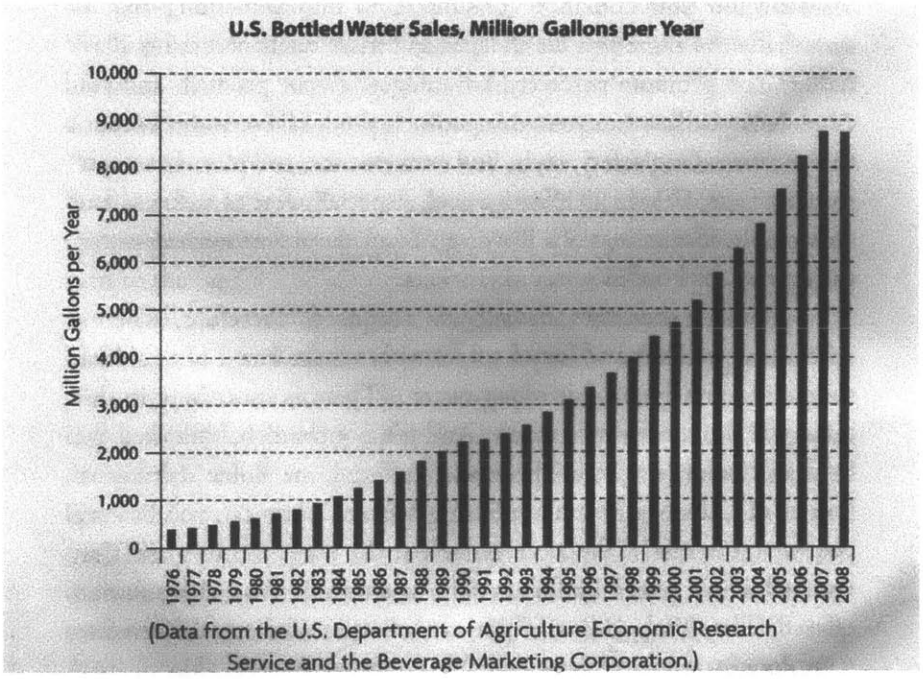
27 Anisha I. Patel and Karla E. Hampton, "Encouraging Consumption of Water in School and Child Care Settings: Access, Challenges, and Strategies for Improvement," American Journal of Public Health 101, Number 8 (2011): 1370-1379.

suspicion of government, suggesting that tap water was unsafe.[28] Whether suspicion of government led to disdain for tap water or whether advertising fueled the suspicion in the beginning is probably impossible to determine, but they fed and thrived on each other. Water bottles began popping up in vending machines, and advertising showed waterfalls and clean tropical locations, and suggested that all kinds of insidious creatures lived in regular tap water. Both bottled water and water filter (such as Brita) advertisements suggest that there is something wrong with tap water – that it is impure, unclean, and not as healthy as bottled or re-filtered water.

A few studies have examined these issues of drinking fountain access and attitudes. Anisha I. Patel, a doctor and public health researcher with the University of California, San Francisco, has conducted several studies focused on water intake in California public schools. One, a 2014 study of middle school drinking fountain attitudes, found high levels of belief that the water is unsafe to drink (especially among low-income students), and a correlation between that belief and lower total water consumption. According to the paper, many students,

> "reported that they agreed or strongly agreed that drinking fountains are dirty (59%) or that water from drinking fountains does not taste good (48%), ...that it was not okay to drink from school fountains (31%), that drinking from fountains could make them sick (33%), and that the water from the fountains contained

28 Elizabeth Royte, *Bottlemania: Big Business, Local Springs, and the Battle over America's Drinking Water"* (New York: Bloomsbury, 2008), 34.



Growth of the bottled water industry. Image from *Bottled and Sold.*

> chemicals such as lead (24%); 80% reported at least one of these attitudes. When asked about intentions to drink water at school, 30% of students said that they were unlikely or extremely unlikely to drink water from drinking fountains the next day at their school. In bivariate analyses, students with more positive attitudes about school water fountains had significantly greater intentions to drink water at school. Boys, students of other races/ethnicities, students who were not eligible for free/reduced-price meals, and students not born in the United States were significantly more likely to intend to drink water at school."[29]

In another study of more than two hundred public schools in California, Patel et al. established guidelines for drinking water access in schools, compared water access in 240 California schools, and found access to be extremely low. No schools met their criteria for excellent water access. Building codes are typically followed to create a minimum standard:

> "In California and many other US states, water policy has been limited to building code specifications regarding the number of water access points required per a given number of students. Even among building code requirements, there is great variability among states. For example, although Massachusetts has a building code of 1 fountain per 75 students, in California, schools

---

29 Patel et al. "Middle School Student Attitudes About School Drinking Fountains and Water Intake." *Academic Pediatrics* 14, Number 5 (2014): 471-477.

Key Considerations for Providing Excellent Drinking Water Access in Schools

Location of water sources:

At least 1 water source is available in the following key school locations:

- Food service area
- Outdoor physical activity area
- Indoor physical activity area
- Classrooms, including modular buildings
- Common areas

Number of water sources:

The school has 1 water source for every 25 students

Nonfountain sources:

At least 1 nonfountain source of water accessible for students throughout the school day

Water source maintenance:

Water sources in the school are maintained (clean of debris and trash, working, and with adequate flow rates)

Water quality and safety:

School drinking water is tested for lead or other contaminants

The school posts drinking water quality testing results for staff and students to see

Drinking water at the school is clear

Drinking water at the school is cold

Drinking water at the school tastes good

Patel et al.'s criteria for excellent drinking water access.

must have 1 fountain per 150 people."[30]

But these fountains are typically located around bathrooms and their quality leaves much to be desired. In Patel et al.'s study, "one in 4 school administrators strongly agreed or agreed that the drinking water quality at their school was poor (e.g., contained contaminants, was not cold, or tasted bad)."[31] When another set of researchers looked at how student perceptions of tap water affected intake, the students agreed:

> "Nearly 1 in 5 participants disagreed their tap water was safe and nearly 2 in 5 disagreed school water fountains were clean and safe. Perceived tap water risk was more prevalent among non-Hispanic (NH) Blacks (26.4%) and Hispanics (28.3%) compared with NH Whites (14.7%, $p<.001$) and more prevalent among lower-income youth. Negative water fountain perceptions were more common among high school-aged youth....
>
> "The racial/ethnic differences in tap water perceptions detected in this study are consistent with other studies that found that perceived risk of tap water is more common among NH Black and Hispanic adults. The association of a negative evaluation of water fountain safety and cleanliness with daily SSB [sugar sweetened beverages] intake among Hispanic youth is consistent with findings by the authors suggesting an association of tap water risk perception with SSB intake among Hispanic adults. In another small focus group study, Hispanic adults from California's rural Central Valley region reported regularly drinking [sugar sweetened beverages] and juice when filtered or bottled water was not available."[32]

These perceptions are pervasive around the country. In an ethnographic study of attitudes towards drinking fountains conducted at Vassar College, anthropologist M. Kaplan used interviews, photography, and observation to understand cultural interactions with fountains and the influence of bottled water and water coolers. She finds that, "once hailed as providers of safe, sanitary public water, these drinking fountains were seen as sources of dangerous, public, polluted, or medicated water."[33]

The idea that this water is dangerous is directly linked with the popularity

---

30 Patel et al. "Tapping Into Water: Key Considerations for Achieving Excellence in School Drinking Water Access." *American Journal of Public Health* 104, Number 72014 (2014): 1314-1319.

31 Patel et al. "Tapping Into Water: Key Considerations for Achieving Excellence in School Drinking Water Access." *American Journal of Public Health* 104, Number 72014 (2014): 1314-1319.

32 Onufrak, et al. "Perceptions of Tap Water and School Water Fountains and Association With Intake of Plain Water and Sugar-Sweetened Beverages." *Journal of School Health* 84, Number 3, (2014): 195-204.

33 Kaplan, M. "Lonely Drinking Fountains and Comforting Coolers: Paradoxes of Water Value and Ironies of Water Use." *Cultural Anthropology* 26, Number 4 (2011): 514–41.

of bottled water. In his book *Shopping Our Way to Safety*, Andrew Szasz writes about the late 20th century growth of "personal commodity bubbles," in which consumers who can afford it buy protective services:

> "There is awareness of hazard, a feeling of vulnerability, of being at risk. That feeling, however, does not lead to political action aimed at reducing the amounts or the variety of toxics present in the environment. It leads, instead, to individualized acts of self-protection, to just trying to keep those contaminants out of one's body. And that is not irrational if one feels that there is nothing to be done, that conditions will not change, cannot be changed. I think, therefore, that we can describe this as a resigned or fatalistic expression of environmental consciousness."[34]

He goes on to detail how bottled water companies recognized this as an opportunity: identifying their water as either originating from distant, uncontaminated sources (such as Fiji) or as having undergone a "hypertechnological intervention" (reverse osmosis, ultrafiltration, etc.).[35] The bottles are adorned with mountain landscapes and waterfalls, but, as Szasz puts it, the bottle itself is perhaps the most commanding image of purity. "Someone took the time to isolate it from the rest of the environment, to segregate it, bottle it, seal it. It *must* be cleaner, purer, better than water that has *not* been singled out, the mundane kind of water that just runs out of the kitchen faucet....the bottle is a special kind of signifier. It is not a word, and it is not an image. Here, the object acts as its own sign." In 2001, 86% of American adults had "concerns about their water;" 51% worried about possible health contaminants.[36] The reinforcement of distrust of tap water and bottled water marketing has been very successful.

In fact, as one author noted in 2011, "Americans spend almost as much each year buying bottled water ($21 billion) as they do maintaining the nation's entire water system ($29 billion)."[37] If Americans are truly concerned about the safety of their tap water, one very logical recourse would be pushing for better maintenance of and investment in municipal water sources. But instead of paying nominally higher taxes to ensure the safety and availability of public drinking water, Americans have opted to spend that money privately, supporting giant corporations turning a huge profit on this water. Despite this, American water remains

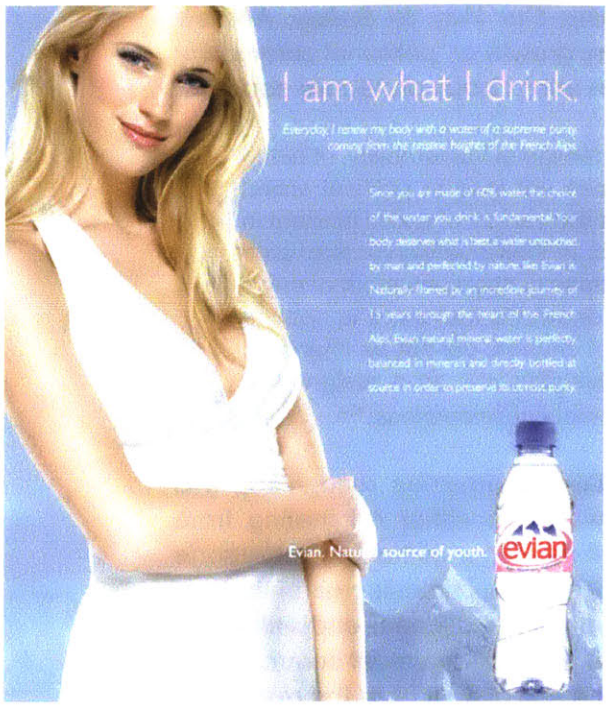
---

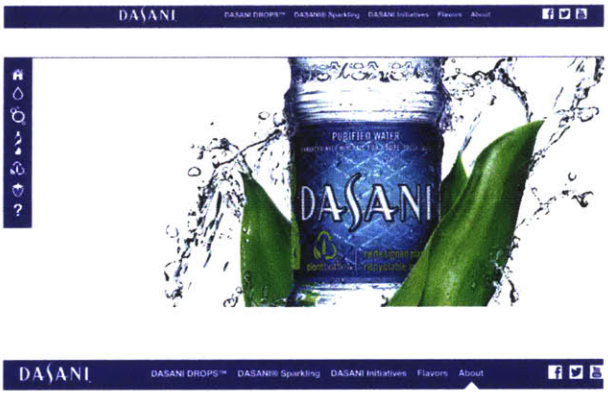
34 Andrew Szasz, *Shopping Our Way to Safety : How We Changed from Protecting the Environment to Protecting Ourselves.* (Minneapolis: University of Minnesota Press, 2007), 2-3.

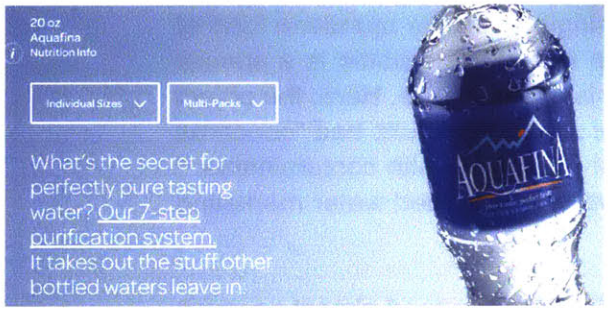
35 Andrew Szasz, *Shopping Our Way to Safety : How We Changed from Protecting the Environment to Protecting Ourselves.* (Minneapolis: University of Minnesota Press, 2007), 125.

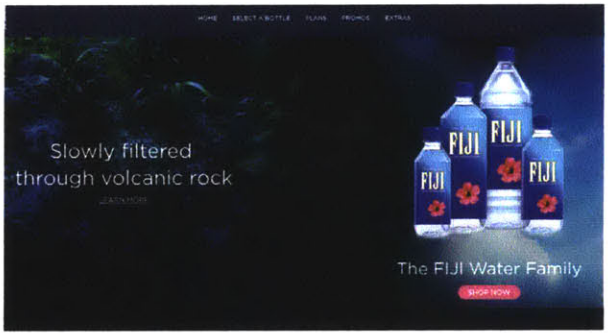
36 "2001 National Consumer Water Quality Survey," as quoted in Szasz, Andrew. *Shopping Our Way to Safety : How We Changed from Protecting the Environment to Protecting Ourselves.* (Minneapolis: University of Minnesota Press, 2007), 106.

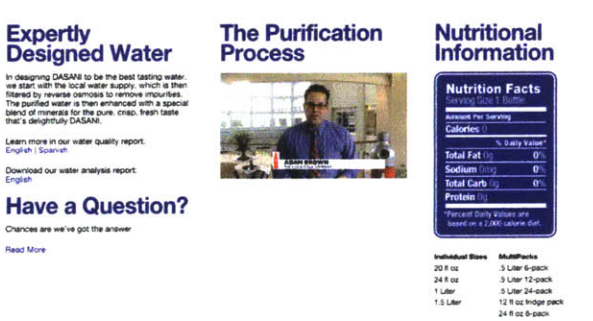
37 Charles Fishman, *The Big Thirst: The Secret Life and Turbulent Future of Water* (New York: Free Press, 2011), back cover.

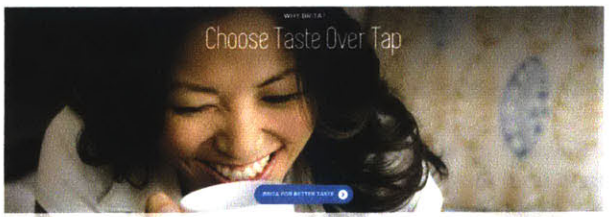


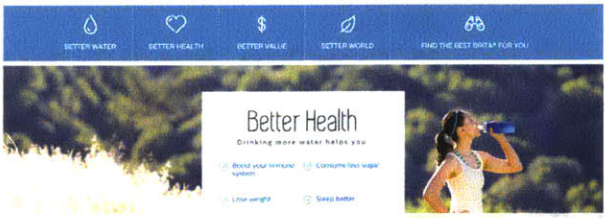












Bottled water and water filter advertisements sell health, beauty, taste, and purity through images of nature and "hypertechnological interventions." Images from Evian, Fiji, Smartwater, Dasani, and Brita websites.

overwhelmingly safe to drink, and is actually tested to much higher standards than bottled water. In his book *Bottled and Sold*, Peter Gleick describes how tap water is regulated by the Environmental Protection Agency (EPA), but bottled water is regulated by the US Food and Drug Administration (FDA). Author Charles Fishman points out that,

> "While the United States is the single biggest consumer in the world's $50 billion bottled-water market, it is the only one of the top four—the others are Brazil, China, and Mexico—that has universally reliable tap water. Tap water in this country, with rare exceptions, is impressively safe."[38]

And yet, as Gleick notes,

> "Suburban shoppers in America lug cases of plastic water bottles from the grocery store back to homes supplied with unlimited piped potable water in a sad and unintentional parody of the labor of girls and women in Africa, who spend countless backbreaking hours carrying containers of filthy water from distant contaminated

---

38 Charles Fishman, "Message in a Bottle." *Fast Company Magazine*, July/August 2007.

Coke machine: privatized water replaces public water. Minneapolis, MN

sources to homes with no water at all."[39]

These attitudes have found physical manifestation in a cynical disregard for drinking fountains in built space. There have been several instances of public buildings defying building codes to exist without drinking fountains – and most likely, the documented cases that have gotten media attention are a mere fraction of the actual instances. Roadside rest areas in Connecticut were built without drinking fountains – officials stated that people could ask for a cup of water from any of the restaurant merchants.[40] Aside from the obvious lucrative extrapolation that someone who has already gone to all the trouble to wait in line and approach the counter is probably much more likely to buy something, the additional barriers this adds to drinking water is troubling (see diagram on page 39). In 2009, the Cleveland Cavaliers basketball team removed all of the drinking fountains in the stadiums for "health reasons," and posted signs that read, "For your convenience, complementary cups of water are available at all concession stands throughout the Q [Stadium]." Author Charles Fishman estimates that the Cavaliers may

39 Peter H Gleick, *Bottled and Sold: The Story Behind Our Obsession with Bottled Water* (Washington: Island Press, 2010), xii.

40 "For The Love of Fountains." *The Colin McEnroe Show*, NPR, 2011.

Trash-filled lightrail station fountain, Sacramento, CA

Howe Park fountain, Sacramento, CA

Howe Park fountain, Sacramento, CA

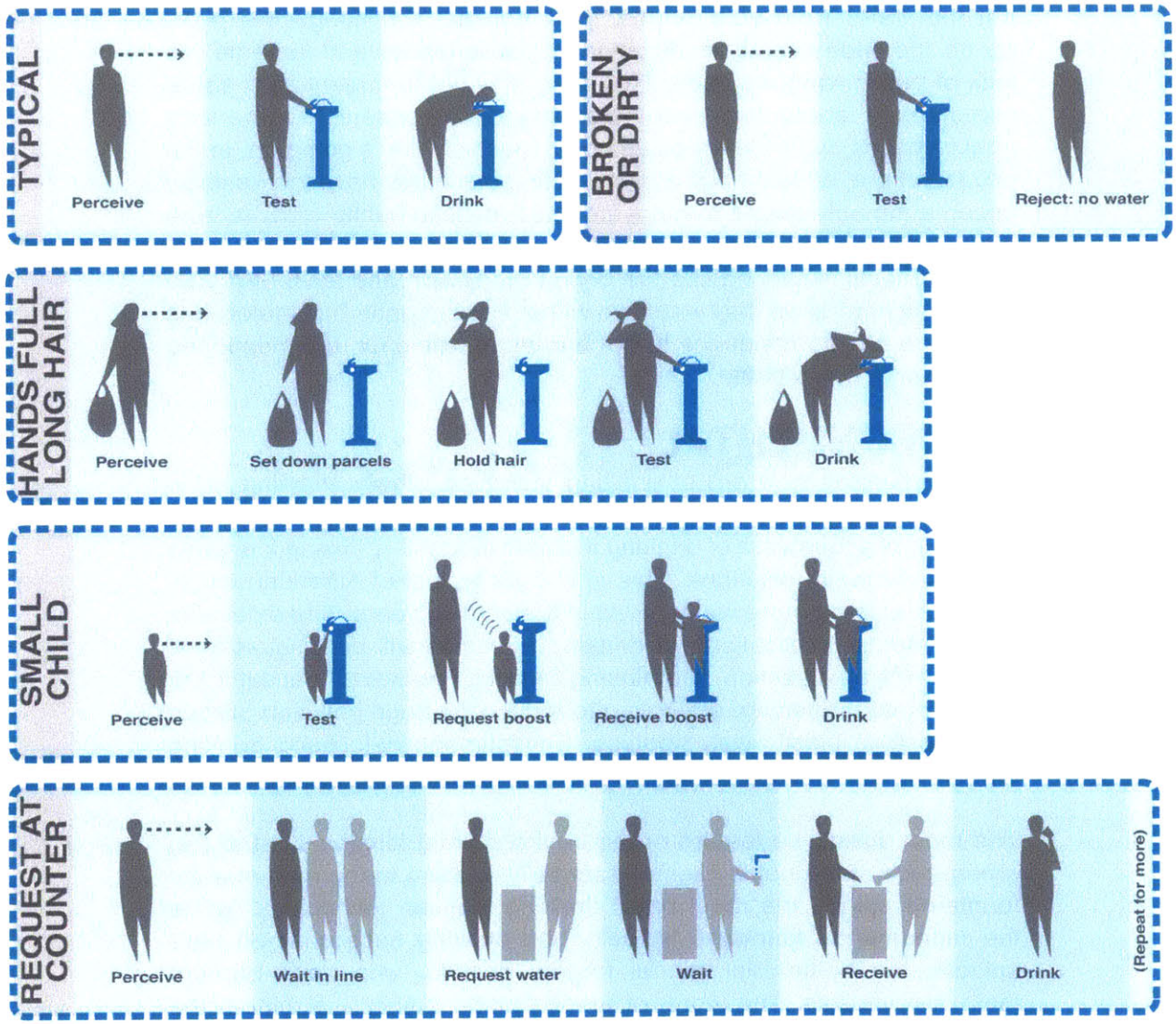
have made up to $10,000 extra per game selling bottled water until a public outcry, led by a local newspaper, convinced them to reinstall the drinking fountains.[41] And in 2007, a new football stadium opened at the University of Central Florida with no drinking fountains. The sold-out first game took place in 100 degree weather. No one was allowed to bring in their own bottles for "security reasons," bottled water sold at the concession stand for $3 per bottle, and, confronted by overwhelming demand for water, the concession stands ran out of these bottles before the end of the game. The heat and the lack of water created a terrible spate of heat-related illness: sixty fans had to be treated by campus medical staff, and eighteen people were taken to hospitals.[42]

---

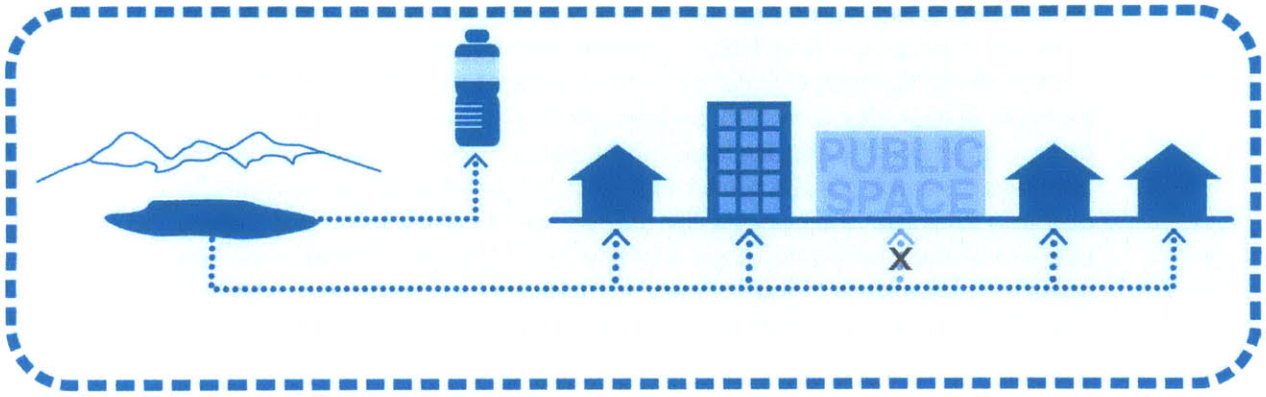
41 Charles Fishman, *The Big Thirst: The Secret Life and Turbulent Future of Water* (New York: Free Press, 2011), 287.

42 Peter H Gleick, *Bottled and Sold: The Story Behind Our Obsession with Bottled Water* (Washington: Island Press, 2010), 1-2.

BARRIERS TO DRINKING WATER



PRIVATIZED WATER



The privatization era might be best represented by the popular 2014 song "Water Fountain," by the indie band tUnE-yArDs. The chorus proclaims, "No water in the water fountain / No side on the sidewalk / We're gonna get the water from your house, your house / We're gonna get the water from your house, your house." The songwriter picks up on the widespread privatization of public goods and laments the lack of public water sources. This song may not be meant as a social commentary about the ever-increasing disinvestment in America's public spaces, but it clearly picks up on much of what's going on. In the privatized era, private homes and vending machines have increasingly become the only places to get water, as American public infrastructure and street amenities languish. The songwriter, who declares that "Nothing feels like dying like the drying of my skin and lawn / Why do we just sit here while they watch us wither til we're gone," ultimately has to enter a private residence to get a drink of water. Or, not mentioned by the song, buy a bottle.

ENVIRONMENTAL

In the emerging new era of drinking fountains, slowly showing up in progressive cities like San Francisco, Minneapolis and Boston, we see evidence of a fourth era of drinking fountain thought – drinking fountains as environmental solutions. This is not yet typical of American cities, but may become more widespread in the coming years. The extensive environmental implications of drinking fountains will be discussed at length in the next section, "Rethinking Drinking Fountains," but suffice to say that many cities are struggling to reduce the huge pollution burden of disposable plastic water bottles. Environmentally-focused drinking fountains have been one outgrowth of this effort.

The most distinctive feature of the environmental fountains is the (re) emergence of the bottle filler – essentially a return to the monumental fountain's spigot, the most basic drinking fountain technology. While the monumental fountains typically had drinking cups chained near spigots, the bottle filler model targets drinkers who have brought their own vessels. The worst of these fountains simply eliminate the

advances in drinking fountain functionality of the past century and have only a downward water stream. Installing these stand-alone bottle fillers requires people to bring their own drinking infrastructure, and furthers a culture of expectation of bottles. The water streams, too heavy to comfortably drink straight (tested extensively by the author), imply that you should own a bottle to use them. Perhaps they further signal their status and cleanliness through the imagined images of people who do carry their own water bottles – wealthy, healthy, and upper-middle class. In any case, they have completely eliminated the human mouth from the process of drinking public water.

In the ethnographic study of Vassar College drinking fountains, Kaplan found that using refillable bottles was very common among students:

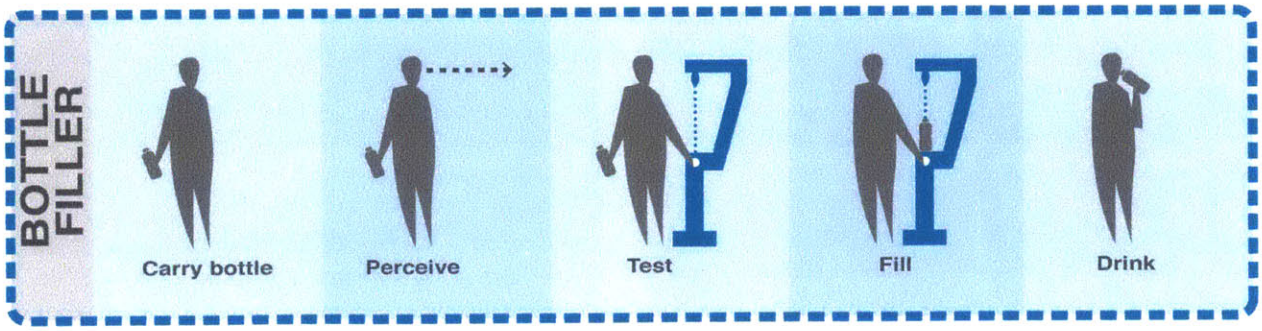
> Many college students carry "Nalgene" bottles, which they fill and refill at fountains or coolers. The College Greens organization promotes this and it is now part of student style. On the one hand, refillable bottles challenge the single-serve vending machines. On the other hand, they reinforce the hyperindividuated body habit of carrying your own water around with you. Most of the bottles bear college logos, rebranding the public water as "ours," but this "ours" is expressed in an individual vessel. Students say that they do not share drinks from single-serve bottles nor from Nalgene bottles.[43]

The first outdoor bottle filler installed by the City of San Francisco is in Yerba Buena Garden, a popular downtown urban park heavily used by tourists and business people. Layered on top of the rationalist fountains in the park, the bottle filler is only about twenty feet away from an existing standard drinking fountain, but is in a much more prominent position. The drinking fountain is located against a wall, inconspicuous. The bottle filler is at a corner of the grass, where pedestrian paths converge from many directions.

The best of these fountains, though, have simply added a tall bottle-

43 M. Kaplan, "Lonely Drinking Fountains and Comforting Coolers: Paradoxes of Water Value and Ironies of Water Use." *Cultural Anthropology* 26, no. 4 (2011): 514–41.

BARRIERS TO DRINKING WATER: BOTTLE FILLER



Yerba Buena Park bottle filler without attached fountain, San Francisco, CA

MIT Building 7 bottles saved counter, Cambridge, MA

MIT Building W36 fountain with sticker, Cambridge, MA

California Academy of Science fountain, San Francisco

filler element to the standard drinking fountain – a popular model is a three-part object with a bottle filler, an ADA-accessible normal arced drinking fountain, and a ground-level dog bowl. This model allows maximum access: for people filling bottles (very difficult to do in a standard fountain), for those without bottles, and for dogs, which are not often accommodated in city spaces.

The gradual realization that bottle fillers could lead to some amelioration of plastic bottle pollution has led to an emerging new era of drinking fountain propaganda. Some educational facilities, such as the California Academy of Sciences and the Provincetown Observatory have created informational signage above the fountains. The signs typically give pollution statistics, information about how rigorously public water is tested, and encourage people to give the water a try with jaunty graphics. Many new indoor bottle fillers have an associated LED (light emitting diode) display showing how many disposable plastic water bottles they have saved, assuming that every sixteen ounces of water they dispense would otherwise have equaled one plastic bottle. So far, though, these display features have only been installed with indoor, semi-private drinking fountains in places like universities, airports, and museums. Concerns about the durability of LED displays will likely limit any truly public outdoor manifestations of these bottle-saver counters, but non-LED signage could easily be incorporated into a durable outdoor design.

Golden Gate Park fountain with bottle filler, San Francisco, CA

Seattle Center fountain with bottle filler, Seattle, WA

Perhaps the most progressive and exciting drinking fountains of the emerging environmental era are in Minneapolis. In 2008, a friendship between mayor R.T. Rybeck and Sandy Spieler, a theater artist whose work focuses on water quality, led to the idea of using artist-designed drinking fountains to promote the city's tap water over bottled water.

Spieler's awareness of drinking fountains came as she was trying to figure out how to convey the environmental connectedness of water through performance. According to an article about the performances,

> "she noticed a familiar site in the back of the lobby of the theater, a drinking fountain with an "Out of Order" sign on it. 'We didn't know why [it didn't work], just never thought about it in the 19 years we've been here,' said Spieler. With the drinking fountain out of commission, the theater had been selling bottled water to its patrons, thus engaging in its own profit of the sale of water. 'We had inadvertently stepped into the privatization of water through the sale of water that isn't connected to a public system, isn't giving back to a reciprocal relationship... And if you know that the water in a fountain is good for you, you know that it's good for the next person and the next person.... But if you're just getting a bottled water, you're just thinking only of yourself.'"[44]

Around the same time, the city was launching TAP MPLS (Tap Minneapolis), promoting tap water city wide. The initiative's website's homepage reads,

> "Minneapolis takes great pride in its drinking water. And it should! Minneapolis water is safe, great tasting, and economical. In fact, its among the best tap water in the nation.
>
> Tap Minneapolis is a City of Minneapolis initiative to get more people drinking tap water. At a time when we're all re-evaluating lifestyle habits and purchasing behaviors, there's never been a better time to drink tap. It's so easy, it's so green, and it's so, so cheap.
>
> So seriously: Tap Minneapolis."[45]

In this climate of tap water promotion, a drinking fountain campaign fit in perfectly. Under the mayor's leadership, the City Council approved a drinking fountain campaign, allocating the year's Percent for the Arts funding as well as some of the water department's funding for ten drinking fountains at $50,000 apiece. The city held a competition and received thirty-eight entries; the Public Art Advisory Panel selected

---

44 "Minneapolis Theater Focuses on Water in Series of Performances." Minnesota Department of Health, Waterline: News and Information for Public Water Suppliers in Minnesota 15 (2007): 4.

45 "TAPMPLS," accessed March 21, 2015. http://www.tapmpls.com/learn.

ten, all designed by local artists. According to Public Arts Administrator Mary Altman, who was heavily involved with all phases of the project, because the Parks Department is not operated by the city, they did not choose any park sites or involve the Parks Department in any way. Originally, the city looked for appropriate sites by counting bikers and pedestrians, but to save money, they instead sought private partners who would agree to maintain certain parts of the fountains and install them on their land, adjacent to public right-of-ways.

Unfortunately, the project sparked a city-wide media controversy. Detractors painted the $50,000 drinking fountains as a symbol of city extravagance. Under pressure, the mayor and City Council pulled back and eliminated the water budget funding. That left the year's Percent for the Arts funding, which could fund four fountains.

Writing about the controversy, Minneapolis blogger Cam Gordon highlighted the root of the debate:

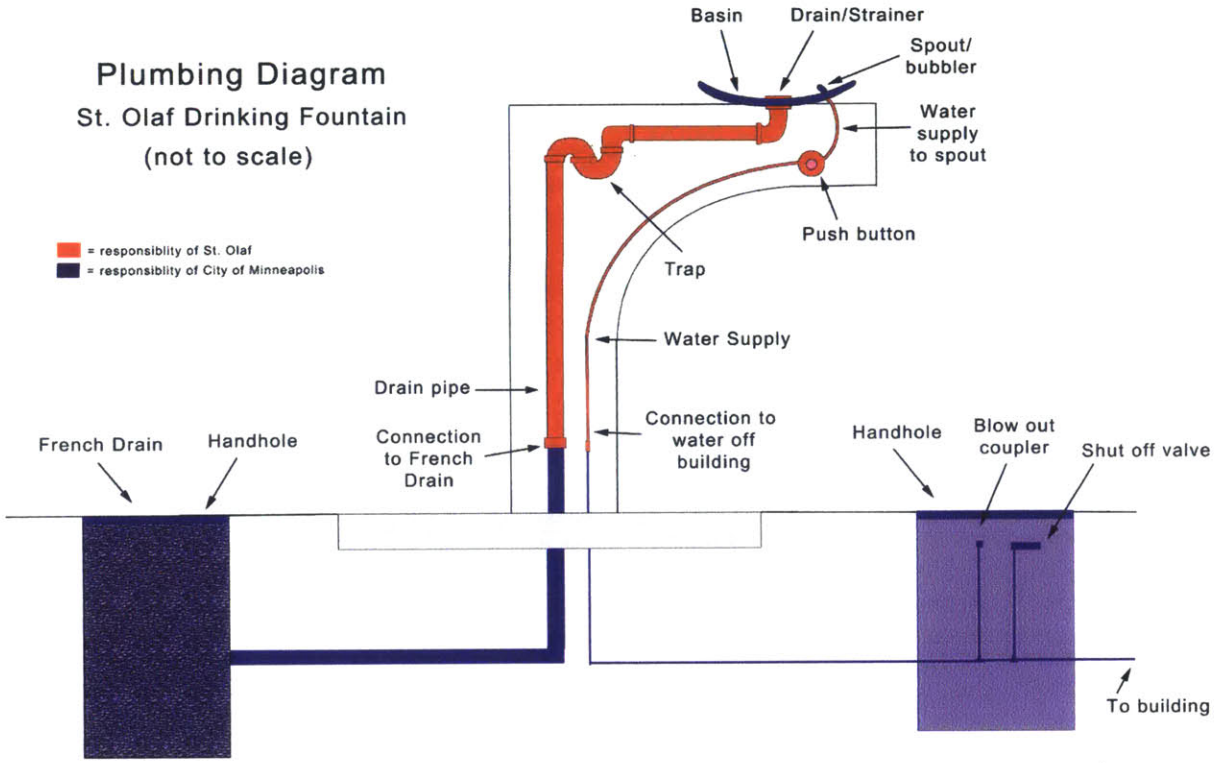
> "these fountains are making a statement: that water is a commons, not a commodity. That everyone in our communities (and everyone in the world, for that matter) has a right to clean drinking water. That drinking water should be freely available to the public, rather than being a private good, bottled in plastic by a corporation and sold for profit. I believe that's actually why conservative commentators have been so critical of this initiative; by making the case for water as a commons, the City of Minneapolis is directly rebutting the conservative notion that nothing is a commons, that everything should be privatized."[46]

Eliminating the Water Department allotment seemed to stem the tide of criticism. The project went forward with just four fountains: two downtown, and two in inner-suburban districts. The remaining selected artists, Seitu Jones, Lisa Elias, Peter Morales, and Gita Ghel, Sara Hanson and Jan Louise Kusske, all used standard assemblies of standard drinking fountain parts within their sculptures. According to Altman, one of the most challenging aspects of the whole process was finding plumbers who were willing to "think outside the box;" none had ever encountered a project of this type before. But the four fountains were eventually built and approved: now a part of the Minneapolis urban landscape, they are beautiful markers of environmental drinking fountain thought.

The fountains are fairly good examples of public-private partnerships: the city paid for them and maintains the water functionality, but the fountains are built on private property adjacent to the public right-of-way, and the building owners agreed to maintain the sculpture

---

46 Cam Gordon. "First Water Fountain Installed." Second Ward Minneapolis blog, November 18, 2009, accessed March 21, 2015. http://secondward.blogspot.com/2009/11/first-water-fountain-installed.html.



Minneapolis fountain responsibility-sharing diagram. Image courtesy City of Minneapolis Community Planning and Economic Development department.

components. (See Plumbing Diagram above) Unfortunately, the lack of willing building owners meant that the fountains were not built in the locations with the highest potential impact, but merely where the city could find a willing participant. According to Altman, many of their most desired locations were on Parks Department land along urban trails, but the non-participation of the Parks Department eliminated those sites as options.

When I visited Minneapolis in March, the water was still turned off for the winter, but the fountains operate in sping, summer, and fall months. They are inspired variously by Native American myths, water molecules, local oysters, and grass, and each has a unique look and texture. Each has a small label posted nearby with the artwork title and a QR code that smartphone users can scan to hear an audio recording of the artist talking aboout the work. A fifth fountain, designed by an artist whose proposal had been among the original ten selections but was cut, was built by a private developer in a new infill development's sculpture park. The object is a giant blue arrow with a bottle filler and dog bowl, calling attention to itself and to the place with its bold form and color, placed in a prime location near transit, a creekside trail, and a lively plaza.

Together, these five drinking fountains upend the idea of what a drinking fountain should look like: there is literally nothing else like these fountains in the United States. Although only three of the five seem to

be in high-use areas, this competition and the gorgeous and functional objects it yielded raises the bar on modern drinking fountains and gives other cities something to aspire to.

In Cambridge, this environmental drinking fountain thought can be observed on a much less ambitious scale: the Department of Public Health, operated by the Cambridge Health Alliance and not technically part of the city, has distributed stickers to put on existing drinking fountains. Part of the "Cambridge in Motion" anti-obesity initiative, the stickers read, "Free Cambridge Water. Wicked Good! Quality tested by the Cambridge Water Department." According to Josh Levin, a

"The Field," designed by Lisa Elias, 2011, Minneapolis

"Tilted Bowl Fountain," designed by Seitu Jones, 2011, Minneapolis, MN

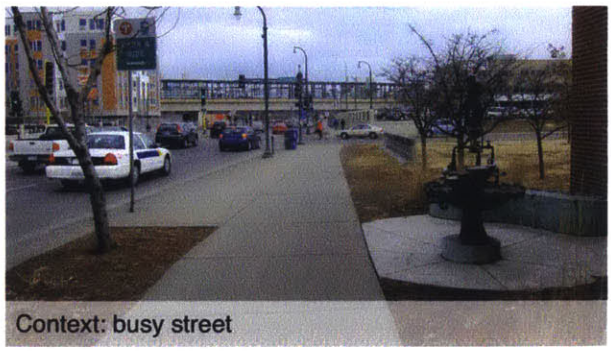
Context: transit hub

Context: redeveloped urban streetscape

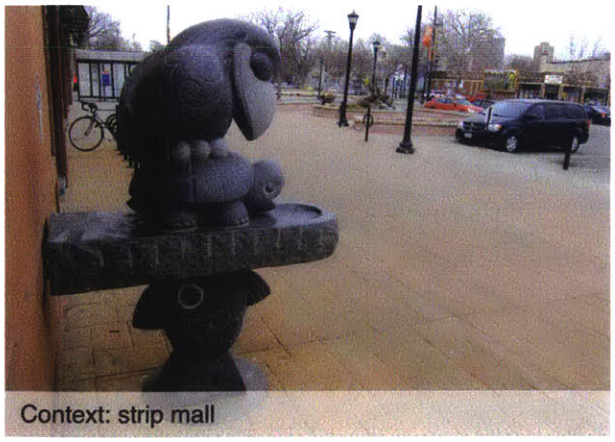
"3 Forms: The Lake Street Bubbler," designed by Gita Ghei, Sara Hanson, Jan Louise Kusske, 2010, Minneapolis, MN

Water of the Dodem Spirits fountain, designed by Peter Morales, 2009, Minneapolis, MN

Information



Context: busy street



Context: strip mall

program assistant with the department, the stickers are a piece of a larger program of water promotion with both health and environmental goals. The department has distributed these stickers to sympathetic drinking fountain owners, given branded water pitchers to institutions, non-profits, and homeless shelters to encourage drinking tap water, and promoted installing "hydrostations" (bottle fillers) in public schools. But according to Levin, the environmental and health goals have sometimes come into conflict: the first priority is promoting water over sugary beverages, so sometimes they do encourage the use of single-serving bottled water. Tellingly, the department has not asked parks administrators to participate; as in Minneapolis, a single agency attempts to promote tap water without the benefit of input from the owners and operators of all of the outdoor drinking fountains - the Parks Department - within its boundaries.

ATYPICAL: PORTLAND

These four layers of drinking fountain types, monumental, rationalist, privatized, and environmental, exist to a greater or lesser extent throughout the United States. The typical city has a smattering of each. But in a country filled with typical drinking fountain conditions,

The fifth fountain: "Calamus," designed by Andrew MacGuffie, 2011, Minneapolis, MN

Context: sculpture park and plaza

Context: transit

Portland, Oregon seems to be an outlier. Portland's Benson Bubblers are omnipresent throughout downtown: seemingly every other corner has a cast bronze fountain with four bubbler bowls and upward jets of continuously flowing water. Their image appears on Portland posters and in the logo of the Portland Water Bureau. They are the only consistent network of monumental fountains in the United States still in use for their intended purpose. On a recent January day, about 5% of passers-by stopped to drink from the fountains for an average of about 2.7 seconds, a number which probably represents a low baseline of use, as many people told me that the Bubblers get much higher use in the summer.

In 1912, Simon Benson donated $10,000 to build twenty drinking fountains in Portland. Benson, a local lumber titan, saw that there was no source of free, accessible water in the city: there are at least four different stories about what brought it to his attention. Native Portlanders, historic newspapers, the Oregon Historical Society, and the Water Bureau all disagree on the true story. Even Benson's grandson and his daughter disagree, relating different anecdotes given by their famous relative, but all stories agree that there was a clear need for fresh water in the city. In one telling, a woman fainted on the sidewalk, and when people called for water to revive her, there was none to be found. Another story describes a thirsty Benson entering a saloon to ask for a glass of water and being told that they only sold beer. He bought a beer and asked for a glass of water to go with it, drank the water, left the beer behind, and realized that water should be available without patronizing saloons. In a third story, he saw a little girl crying at a parade because she was so thirsty and there was nothing to drink. The fourth and most widely accepted story, corroborated by Benson's daughter in her biography of him, is that Benson noticed that his lumber workers came to work with liquor on their breath. Asking them why they had been drinking (Benson himself was a teetotaler), they told him that there was no clean water available. Each of these stories depict Benson recognizing and addressing an acute public need, but the lumber worker story includes a little twist: promotion of a temperance agenda and most likely, improved lumber profits as a result of sober employees. Once the fountains were installed, Benson bragged that saloon owners reported revenues lowered by 25-40%.[47] Drinking Benson's "Bull Run Cocktail," nicknamed for the reservoir the water came from, became immediately popular and depended-upon within Portland.

In most American cities of that time, public water was not safe. Pollution and sewage were usually dumped directly into rivers, and only the wealthy could afford water delivery or city pipes. Tea was thought of as un-American, coffee was expensive, but beer and gin were cheap and

47 Alice Benson Allen, *Simon Benson: Northwest Lumber King* (Portland: Binfords & Mort, 1971).

Smiling happily, Benson stands in front of one of the twenty bronze drinking fountains he donated to the City of Portland in 1912. "They helped knock the profit out of the saloon business and were one of the factors in making Oregon go dry."

Simon Benson with one of his Benson Bubblers. Image from the Oregon Historical Society.

plentiful. The luxury of clean, cool water was very unusual.

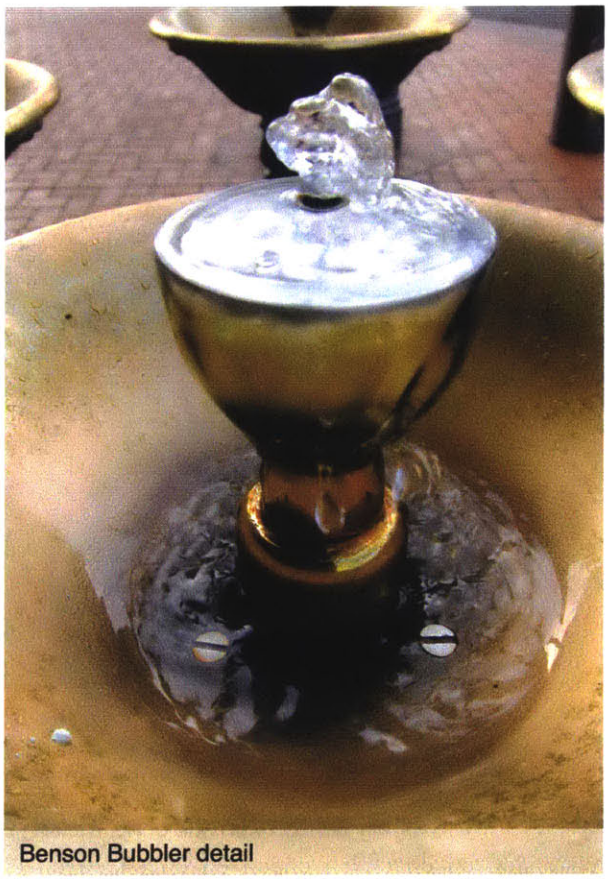
The Benson Bubblers, as they came to be known, were state of the art at the time. A.E. Doyle, described by the Portland Architecture Guide as an "architectural demi-god,"[48] designed the fountains in a Classical style, but with the most modern fountain technologies of the time. Before the upward bubbler was invented around 1900, public drinking fountains usually had cups attached, which people would fill under a spigot, drink from, and replace on a shelf. Luther Haws invented the upward jet In 1906: the 1912 Benson Bubblers incorporated this technology and would have been seen as very sanitary. The cast bronze bowls and bases, embellished with leafy designs, were truly "high design," located by city engineers on downtown streets and connected to Bull Run water via existing water pipes.

The twenty original fountains fell into disrepair by the 1950s. Some were moved or removed to accommodate widening streets, and some had two of their four arms removed by city officials. In 1958, Francis J. Murnane, a local dockworker, began a one-man campaign to restore the fountains. Publishing articles and writing to city officials,

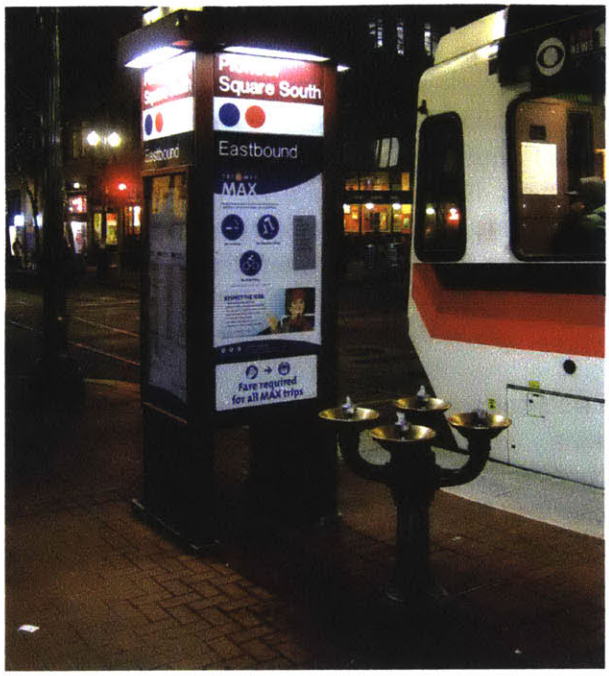
---

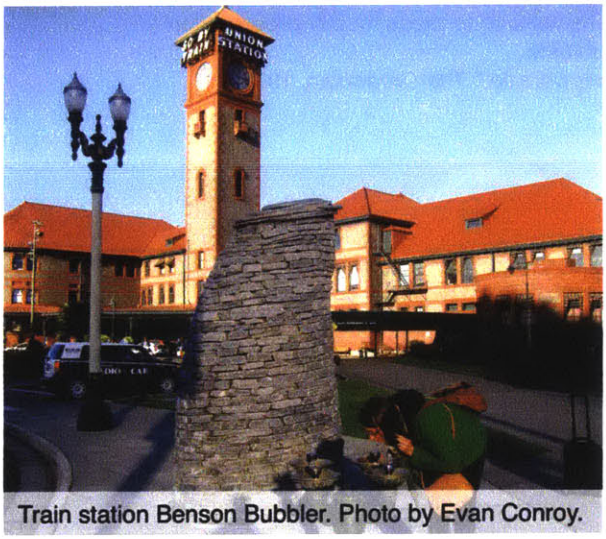
48 Bart King, *An Architectural Guide to Portland* (Corvallis: Oregon State University Press, 2007), 22.

Typical Benson Bubbler



Benson Bubbler detail





Train station Benson Bubbler. Photo by Evan Conroy.

Tim Hall of the Portland Water Bureau shows a map of Bull Run, the source of the city's water

he eventually brought the fountains back into the public consciousness and convinced the city to actively manage them again.[49] The city also developed a single bowl model based on the original Benson Bubbler design, and installed it in other prominent locations around the city. And in 1976, the Simon Benson Trust donated another twenty fountains in honor of Portland's bicentennial celebration. Now, there are 52 total four-armed Benson Bubblers, two three-armed Benson Bubblers, and more than 80 one-bowled Bubblers. The Water Bureau maintains these 134 Bubblers with a rigorous cleaning schedule – each Bubbler gets a good scrub-down every two weeks.[50]

Many people are surprised that in an eco-conscious city like Portland, the water runs continuously in fountains - some wonder whether the water is recirculated (it's not). But according to Tim Hall of the Portland Water Bureau, water scarcity is a non-issue in Portland. Their reservoirs regularly overflow, and continuous rainfall throughout the year ensures Portland's plentiful drinking supply. The Water Bureau's website states that the fountains use less than 1/10th of one percent of Portland's total

---

49 After Murnane's Benson Bubbler victory, he went on to press for city preservation and restoration of other city buildings and fountains.
Sterling, Donald J. "Faces pass in 40-year-long parade." *The Oregonian*, 1992.

50 Tim Hall, interview, January 28, 2015.

A rare three-armed Benson Bubbler

Single-bowl bubbler

water.[51]

Portland has taken steps to reduce the total usage, though, while maintaining the fountain forms and functionality. Over the years, the fountains have been retrofitted with smaller pipes, so that each fountain uses a fraction of the amount that originally came out, and in 2000, timers were added to turn off the fountains between 11pm and 6am. Most fountains are manually turned off during unusually cold or windy weather to prevent freezing and slippery sidewalks, and have been turned off during times of drought, a rarity in the verdant Pacific Northwest. During a rare drought in 1993, the city added on-off buttons to the (non-historic) single-bowl bubblers, but they were removed in 1997, deemed "singularly unsatisfactory."[52] According to Hall, keeping the fountains off discouraged use: he cited how residents take quick drinks of water without breaking their stride – turning a fountain on with a button is an interruption, and a barrier to use.[53] I observed people

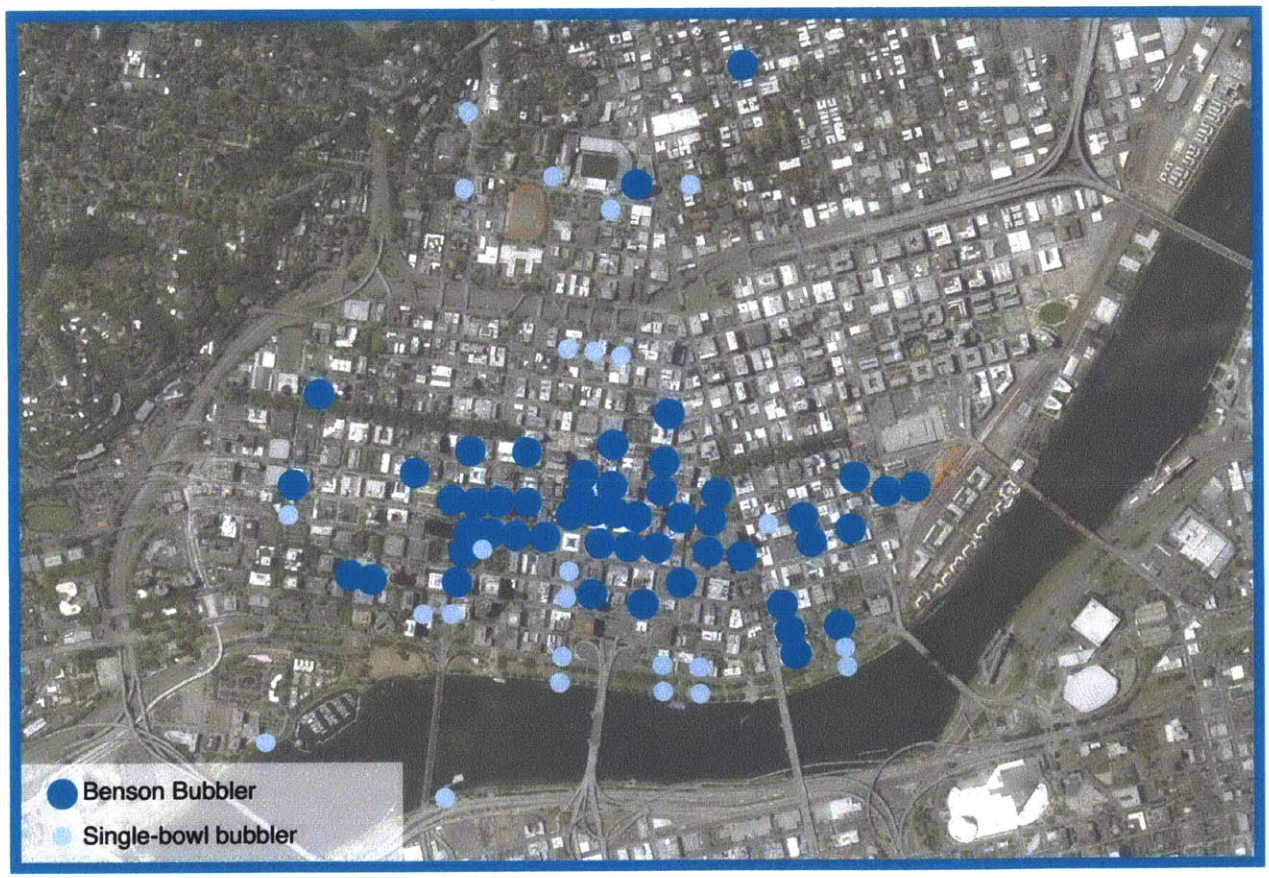
---

51 "Benson Bubblers," Portland Water Bureau website, accessed April 16, 2015. https://www.portlandoregon.gov/water/article/352768

52 Kristine White, "Sip a Cool One Courtesy of Mr. Benson." *The Portland Tribune*, 2001.

53 Tim Hall, interview, January 28, 2015.

BENSON BUBBLER LOCATIONS, PORTLAND, OREGON

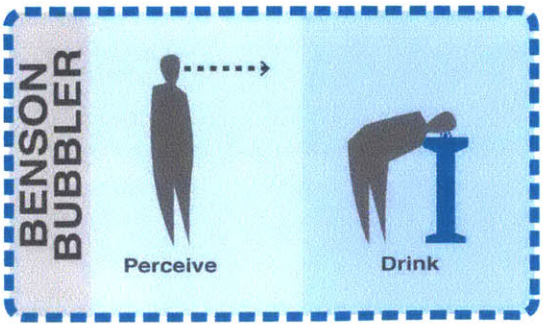


using them just like this – swinging their upper bodies down for a sip as they walked by. Additionally, continuous running water provides a long-distance visual cue that the fountains work. I estimate that about 40% of drinking fountains in public space are either broken, shut off, or have too little pressure to drink comfortably from – but with most of these, you have to stop and push a button to find out. Common contemporary fountains with two bowls at different levels make you try both buttons, just to be sure, as often, only one spigot works. (Nothing increases incipient thirst like a broken drinking fountain!) The Benson Bubblers, continuously running, visually signal their condition at a glance. Without the need to push the button to test whether or not the fountain actually works, a barrier to use is removed.

The city also recognizes the humanitarian need for the fountains among the homeless population. During the night, cold and windy weather, and droughts, when most fountains are turned off, the city leaves at least two on, in the areas with the highest concentrations of people who are homeless. Hall spoke of this population's dependence on the fountains for water, and many who have studied homelessness issues have indicated the difficulty of obtaining water among homeless populations.[54] A man I spoke to in Portland told me about one of the droughts when most fountains were turned off. He described the "street people" making "pilgrimages" to the operational fountains, and the beauty of seeing everyone emerge from hills and various parts of the city to converge and congregate at the only sources of water available. This anecdote illustrates their acute value and importance to vulnerable populations. True, many frequent Benson Bubbler users could obtain water from their homes or their offices. Most could afford to buy a bottle of water, or get a soda at a vending machine on a hot day. Most people could go into one of Portland's many cafes or restaurants and ask for a glass of water. But homeless populations are usually unwelcome in cafes and businesses. A person unable to afford the $5 that Portland charges to stay overnight in a shelter is certainly unable to comfortably

54 "Adapting Your Practice: General Recommendations for the Care of Homeless Patients Health Care for the Homeless Clinicians' Network." National Healthcare for the Homeless Council website, accessed April 16, 2015.

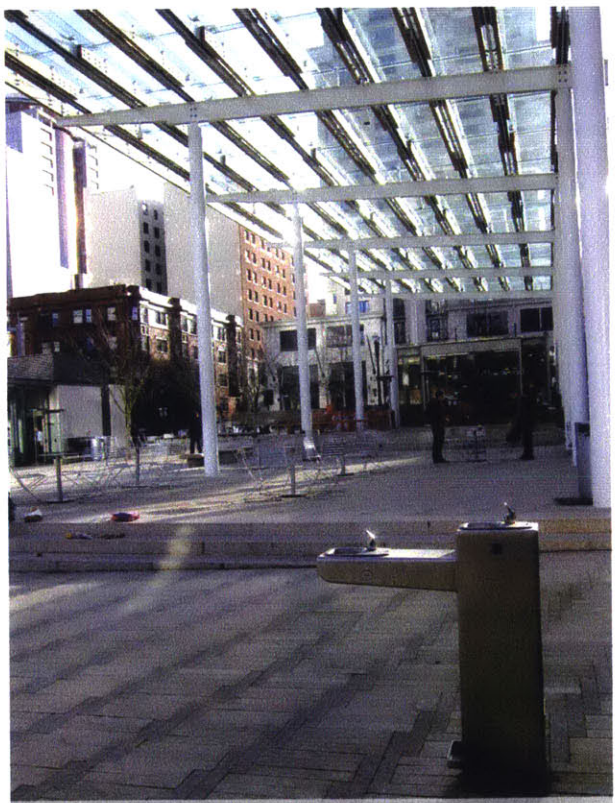
BARRIERS TO DRINKING WATER: BENSON BUBBLER



afford a $2 bottle of water. While providing safe accommodations for those without homes is certainly an ethical imperative for the United States to deal with, and providing drinking fountains will not solve the larger problem, they do take a step towards humane treatment of marginalized people.

And yet, with all these achievements and public investment, the legacy of the Benson Bubblers faces an uncertain future. According to Hall, the city has not approved a new Benson Bubbler in at least ten years. Neighborhood groups can petition for a Bubbler or for the one-bowled fountain, and several of these groups have raised the money to pay for them. But the city has declined all recent petitions due to the subsequent maintenance obligations. Hall cited tight budgets, city cutbacks, and especially the embodied time and money in caring for and managing each of the Bubblers. New drinking fountains in Portland are factory standards: plain powder coated, unmatching, shut off in the winter, and placed only in parks. The Parks Department maintains them as part of their regular work with park restrooms and gardening. And even after citing the public benefits of the beautiful Benson Bubblers, Hall ultimately referred to them as "a luxury." This is a sad turn of events for the country's best drinking fountain network.

I had expected Portlanders to overwhelmingly support Benson Bubblers, but interestingly, conversations about drinking fountains with Portland

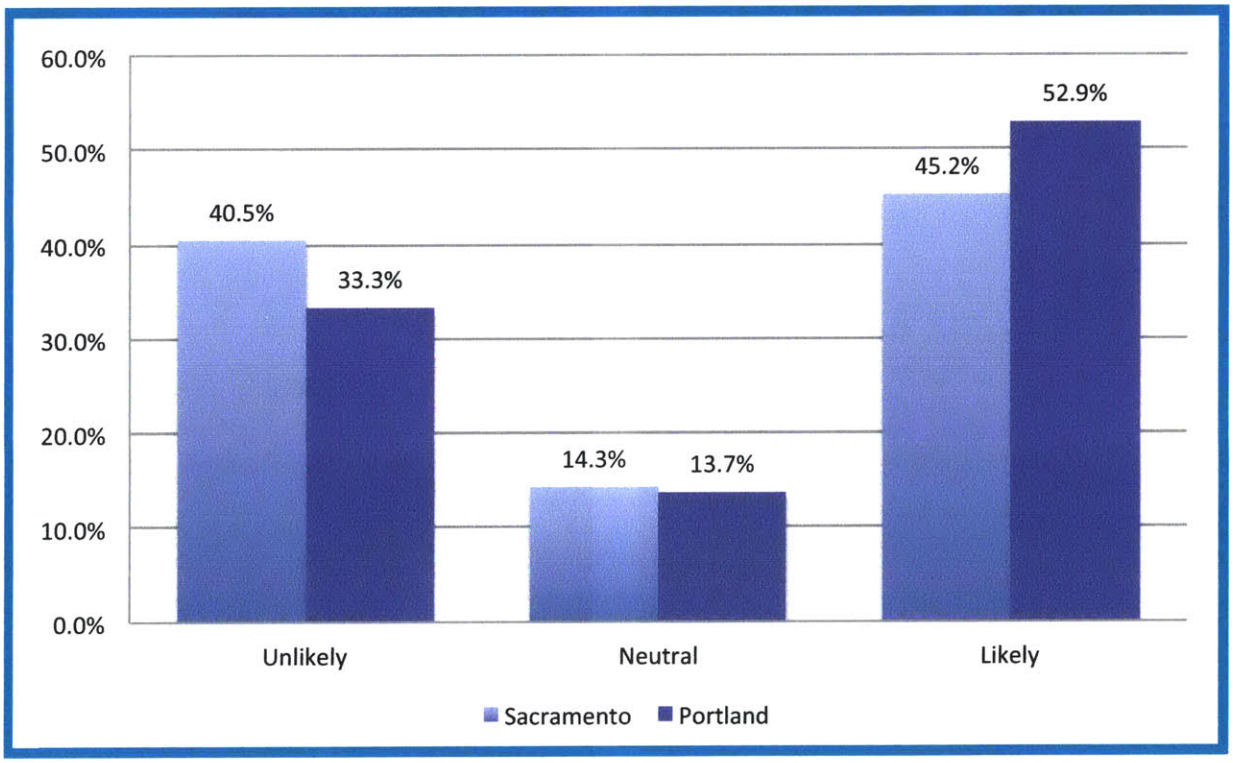


New downtown Portland Director Park drinking fountain: not a Benson Bubbler.

New downtown Portland Pearl District drinking fountain: not a Benson Bubbler.

residents yielded fairly similar reactions to those in Sacramento. Residents were almost equally spilt between positive and negative reactions to the fountains, and over whether or not they were likely to drink from them. The mean response to whether or not someone was likely to drink from the fountain if thirsty, on a scale of 1(low) to 5(high) was 3.41, not statistically significantly higher than the mean score from Sacramento, 3.13. The most common negative reaction to the Bubblers concerned other users: many people disdainfully told me that the fountains are used primarily by the homeless. Some people gave rather lewd descriptions of this use, including one man who called them, "bum showers," and, graphically gesturing, told me that, "literally they stand there and wash their balls." One woman said, "I watch bums bathe in it. My dog gets a kick out of it, though," admitting that she lets her dog put its paws up on the bowl to drink (she later declared the Bubblers' cleanliness to be a negative five on a scale of one to five, apparently unconcerned about her dog's contributing role). A waitress at an underground bar, who did not immediately know what Benson Bubblers were, eventually told me that she always carries her own water and never drinks from public drinking fountains, saying, "there's a big homeless population here, and I'm just a big germophobe." A woman working at the desk of the Oregon Historical Society gift shop, when asked if she used the Benson Bubblers, responded, "No, never. I see too many street people and birds use them." She says she would probably use a drinking fountain somewhere else, agreeing to my suggestion of a suburban park. But, "this area of town is the worst for

"HOW LIKELY ARE YOU TO DRINK FROM THIS FOUNTAIN IF YOU'RE THIRSTY?"



street people; they camp all over here." Class prejudice and mistrust of a "certain type" of visually identifiable person appears to play a major role in someone's likelihood to drink from fountains.

Many people also cited dogs or birds drinking from them as a major deterrent. In fact, a few homeless people I spoke with cited rumors that the fountains were unclean as the reason they did not use the Bubblers: one young woman sitting at the corner of Pioneer Square holding a cardboard sign asking for money said, "I used to use them all the time, but then I heard a rumor about birds in them. I haven't used them since – for a week or two." A nomadic-looking young man with a skateboard and a pit bull on a rope told me that he never drinks Portland water. A few years ago he did "internet research," and found that water is full of drugs and chemicals. Now he exclusively drinks bottled water. In a conspiratorial tone, he tells me, "Keep Portland weird: drink the water!" implying that the "drugs" in the water impair neurological function. Even the user group that seemed to be both the biggest beneficiary and the greatest deterrent to other groups using the Bubblers did not fully trust their safety.

Of those who grew up in Portland, almost all knew a version of the Benson Bubbler story (though most of these stories were very imprecise: one man called them "Boston Bobblers," and was convinced they were imported from Boston). Recent Portland transplants, however, seemed to be less aware of the fountains' names and story. A young woman from Oklahoma told me that she only drinks from them if she's exceptionally thirsty - "if I can't help it." She mused further that they must be wasteful, or if the water is recycled, thinks it must be expensive to filter. In conversation away from the fountains, referring to Benson Bubblers yielded little recognition – with prompting and description of the "four-armed drinking fountains all over downtown," everyone eventually registered what I was talking about. One woman told me that she, "did not know they were drinking fountains; for a long time I thought they were just decorations." I suspect that she thought they were decorations up until the exact moment I asked her about drinking from them.

But while many of the negative and neutral reactions echoed what I'd heard in Sacramento, those with positive reactions were much more positive. Many people I spoke with expressed delight when asked about the fountains, saying things like, "They're gorgeous! They're Benson Bubblers!" "I love the Benson Bubblers! They remind [me] of public drinking fountains in Italy," and "[drinking fountains] are an essential amenity for public spaces!" An architect exclaimed, "Benson Bubblers? Of course they're awesome!" A bartender at a fancy whiskey bar (which might mean that he has a very refined beverage palette) told me that he loves the fountains. "It's convenient – I don't need to buy a bottle of water. I always drink the tap water. I don't drink from them daily, but if I'm thirsty, I'll take a sip." One man told me that they are safer than drinking

from plastic bottles, and another described how his kids use them all the time, explaining, "I'm from Europe - we're not as germaphobic as Americans!" Another man described a benefit of having four bubblers as being harder to vandalize and debilitate with wads of gum, and more likely to have one bubbler working and clean. One older man who told me he'd worked in construction for most of his life lamented the loss of beautiful public spaces. Discussing the Bubblers triggered him to tell me about the beautiful parks that were built under Clinton, "But now we've lost the idea of building beautiful parks and public spaces - too many cutbacks. You should always go out of your way to improve your community; there's too much 'me me me' stuff going on."

My favorite Portland conversation was with a grey-haired, thick-bearded man named Tony. He carried a small green backpack, and approached the Benson Bubbler at 21st and G, taking a long drink of water while I gave a survey to another young woman. Overhearing a few snippets of the conversation, he jumped in and began effusively expressing his love for the Benson Bubblers. According to Tony, the Benson Bubblers have a spiritual quality as the only place to take in pure water within the city. He described the process of taking a drink of water in a way I'd never considered: as a moment of letting down your guard in a big city and bowing. Further, he told me about how the four bowls let four people have a simultaneous encounter, bowing to each other and all drinking the same water, creating a shared moment among strangers. He described meeting the eyes of other drinkers and having small, spontaneous interactions over the fountains. Tony, who lives in temporary housing, drinks from the Benson Bubblers fifteen to twenty times per day as he walks through Portland, and asserted the need for the Bubblers based on a human right to water. As he walked away, he called back to me, "Good luck with getting more water to the world!"

The differences between Portland and the typical city remain fuzzy. On one hand, Portland has the finest urban drinking fountain network in the country. Water is readily available throughout the city, especially the downtown, and is constantly available, in some locations, to homeless populations. But Portland's model for public water excellence may be more of a fluke than anything, a combination of committed individual policy entrepreneurs leading the charge, a city ethic of valuing public space, growing interest in historic preservation, and a naturally abundant resource.

The philanthropist Simon Benson, through one of the many origin stories, happened to notice that there was a need for free public water. Through his wealth and connections, he secured the design services of the city's best architect to design an iconic object. When the fountains fell into disrepair in the 1950's, Francis J. Murnane took it upon himself to raise awareness and convince the city to restore and value the fountains. Shortly after, historic preservation as an idea began to take

off in the United States, and a reverence for old structures became entrenched in urban policy. And the city government recognized the iconic and humanitarian potential of the fountains, making a commitment to maintain the fountains. These successes have not translated into city-wide love for and trust in the Benson Bubblers as purveyors of public water, but it has kept them available and maintained for those who want to use them.

PERCEPTION VERSUS REALITY

In both Sacramento and Portland, a perception that drinking fountains are unclean exists both in people who do and don't use the fountains. When people assert their strongly held opinions on whether or not drinking fountains are safe to drink from, how rooted in fact are those beliefs? For all of the widespread distrust of drinking fountains, how safe are they really?

It seems that most popular assessments of drinking fountain safety are

purely visual, based on perception and visual analysis. Google searches for "drinking fountain safety" return a few poorly cited blogs and local news channel scare stories. In fact, the most commonly cited "study" on these blogs and news stories is a thirteen-year-old boy's school science project in which he swabbed school drinking fountains and toilets, and found higher bacteria counts on the drinking fountains.[55] This story was carried by ABC News, perhaps signaling a hunger for information about the topic and excitement over sensationalist stories. Another informal study, conducted by a Colorado news station collaborating with a University biologist to swab several drinking fountains around Denver, found widely varying bacteria levels, the worst of which the biologist said, might be harmful to at-risk populations, but would not affect a healthy person.[56] However, these "studies" are misleading for two reasons. First, the presence of bacteria does not mean that something is necessarily unsafe. Humans come in to contact with millions of bacteria every day, and much recent research has suggested that avoiding bacteria is much worse for health than exposure to them.[57] A high bacteria count alone is not indicative of treacherous conditions.

Second, there is a difference between bacteria on the drinking fountain *object* and bacteria in the *water itself.* While searches of scholarly journals return similarly few results on germ-based safety, one of the few studies that has looked at drinking fountain safety in schools found that, "A positive correlation between the water pressure and the microbiological results appears to show that the level of water pressure of the fountain can affect the level of contamination of the water that is consumed by those using the fountain. Those fountains with low water pressure gave some of the highest colony counts and vice versa those with a good pressure generally had lower colony counts."[58] In other words, when water has poor pressure and flow, it was more likely to actually contain high bacterial counts. The study also finds that there is a good correlation between visual assessments of cleanliness and actual bacteria colonies. Well-functioning drinking fountains with good pressure and good maintenance (regular cleaning and repair) are generally quite safe.

In an email correspondence, Dr. Anisha I. Patel, the lead author on the studies about perception of drinking fountains in schools, reflected on drinking fountain safety:

---

55 "More Germs on Water Fountain or in Toilet Water?" *ABC News*, June 19, 2007, accessed April 9, 2015. http://abcnews.go.com/GMA/story?id=3293080.

56 Jeffrey Wolf, "How dirty is that drinking fountain? 9NEWS puts them to the test." 9News, May 23, 2011, accessed March 29, 2015. http://archive.9news.com/news/article/199840/103/how-dirty-is-that-drinking-fountain-9news-puts-them-to-the-test.

57 Jane E. Brody, "Babies Know: A Little Dirt Is Good for You," *The New York Times*, 2009.

58 Kim Walters and Geoff Cram. "Drinking Water in Schools: Hygiene Standards at Fountains." *Nutrition & Food Science* 32, Number 1 (2002): 9.

> "I think it is reasonable to suggest design changes so that the flow is more sufficient to prevent individuals from getting so close to the fountain spout. Another option is a gooseneck retrofit attachment to allow for easy filling of reusable water bottles. Of course, having someone wipe fountains down periodically would also help with bacteria."[59]

But she doesn't think there is anything inherently risky about using a drinking fountain. Thousands of people use drinking fountains without getting sick – in hundreds of hours of research, I have never come across a verified mention of an outbreak or illness ever being traced to a drinking fountain. As long as municipal water systems are maintained, there is no evidence that normal drinking from a drinking fountain increases risk of sickness.

Why, then, do so many people take it for granted that drinking fountains are unsafe across the board? One possible explanation may have to do with their typical placement. Often, drinking fountains are located only near restrooms. While this makes sense from a building economy perspective, using "wet walls" of restroom plumbing on either side of the wall, it may associate drinking fountains with sanitation in users minds. Other times, drinking fountains are clustered efficiently with other park furniture – especially trash cans. Drinking fountains offering supposedly fresh clean water do not seem more clean when associated with bathrooms and trash cans. In public spaces, restrooms are often supremely smelly and filthy, and trash cans are often overflowing and covered in flies. By implication, drinking fountains located near these objects will be seen with suspicion, and assumed to be dirtier than they might actually be.

A playful exhibition at San Francisco's Exploratorium, a popular hands-on science museum, picks up on these perceptions and on the power of disgust. A working drinking fountain is installed on a toilet, such that the fountain's runoff water falls into the toilet's bowl, and visitors are encouraged to drink from it. The adjacent sign reads,

> "A Sip of Conflict: The water in this drinking fountain is perfectly clean, and the toilet has never been used. So why do people often hesitate before taking a drink? Strong emotional associations with objects or people can make it difficult to act objectively around them."

Everyone hesitates, and most people eventually, laughingly, drink from the fountain, feeling a bit disgusted. According to evolutionary psychologist Joshua Rottman, disgust is a uniquely human emotion that likely evolved to help people living in groups avoid ingesting pathogens.[60]

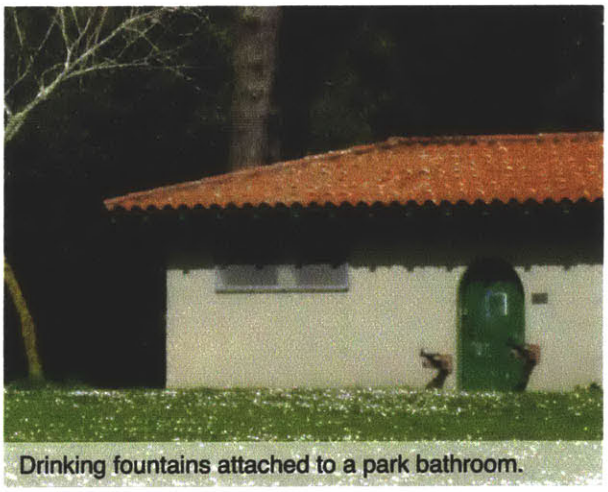
---

59 Anisha I. Patel, e-mail message to author, April 8, 2015.

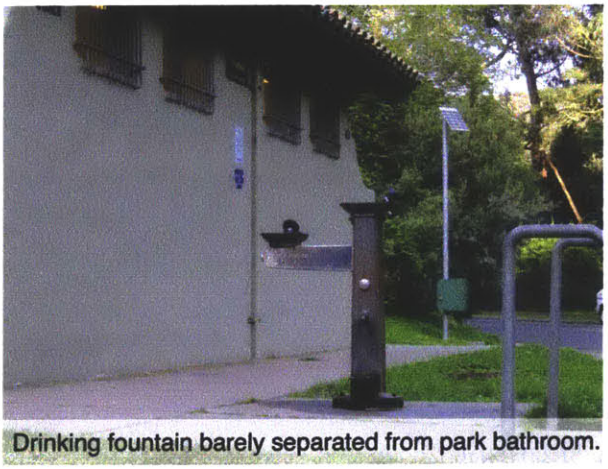
60 Joshua Rottman, "Evolution, Development, and the Emergence of Disgust." *Evolutionary Psychology* 12, Number 2 (2014): 417-433.

Drinking fountain sited with unsightly trash cans, Cambridge, MA

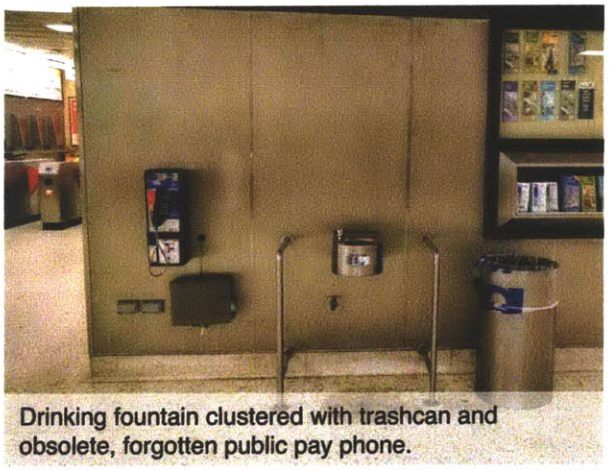
A drinking fountain hides behind a line of trash recepticles.



Drinking fountains attached to a park bathroom.



Drinking fountain barely separated from park bathroom.



Drinking fountain clustered with trashcan and obsolete, forgotten public pay phone.

As picked up on by the toilet drinking fountain, feelings of disgust often kick in with associations of fecal matter, other peoples' bodies, animals that seem "dirty," and other potential sources of pathogens.

The toilet drinking fountain elicits explicit feelings of disgust. Isn't it likely that looser associations, such as drinking fountains near bathrooms and trash cans, also pick up on these feelings of disgust at a smaller and less conscious scale? And in these instances, there usually isn't a sign assuring users that the water is "perfectly clean." These fountains usually do not appear to have conscious care. A professor in architecture school once told my class that the sign of a good building is not needing to ask where the bathrooms are. Legibility of space is a powerful idea, and indeed, in most public buildings, drinking fountains can be reliably found by bathrooms, utilizing the necessary water pipes from the bathrooms. This cost saving measure, however, doesn't ask whether this is really the best place for them. In the San Francisco airport's new Terminal 2, there are drinking fountains by the bathrooms. But, critically, there are also bottle fillers by the food court, in a prominent, central location. These bottle fillers are not a tiny auxiliary button on a soda machine – they have their own clean area and attractive signage about reducing plastic waste. This idea is what Patel et al. were driving at with their paper evaluating excellence in middle school drinking fountains. A drinking fountain by a bathroom is usually insufficient and linked with a disgusting and unclean place in users' minds. Drinking

Exploratorium toilet fountain, San Francisco, CA

fountains near food and eating areas, along nice walking and exercise routes, and in other prominent, non-bathroom locations could become a new paradigm for where drinking fountains should be located.

Further, some drinking fountains near bathrooms may actually be dirtier than those in more visible and separate places. The researchers that studied bacteria colonies in drinking fountain water found that, "there are a number of good reasons why school toilets are not the ideal place to locate drinking water facilities. Fountains in school toilets appear to hold an additional risk of contamination. Siting them in more suitable, accessible places such as corridors, sports halls or classrooms under teacher supervision would provide a more suitable method for supplying fresh drinking water."[61]

Everyone has different tolerances for disgust. This may partially explain the profound split in whether or not people are likely to use drinking fountains. Those with lower disgust thresholds may have no problem with drinking from a fountain after someone they perceive as potentially dirty. This may be one reason that bottle fillers have become so popular – for those who find other peoples' mouths disgusting, the bottle filler removes these mouths from the equation altogether.

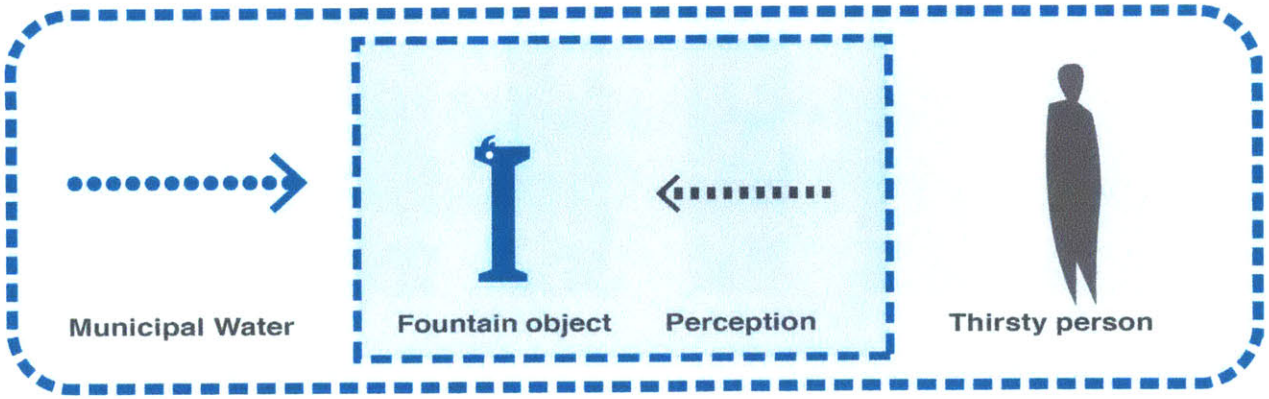
More than any other single factor, the bottled water industry has arguably contributed to a general sense that drinking public water is risky. Combatting widespread perceptions of danger, and achieving better alignment between perception and reality, may be one of the most critical issues for drinking fountains moving forward.

In my Sacramento and Portland surveys, I found a statistically significant correlation between a likelihood to drink from a drinking fountain with two factors: the design rating and the belief that the water was "clean and safe." The cleaner and safer a respondent believed the water was,

---

61 Kim Walters and Geoff Cram. "Drinking Water in Schools: Hygiene Standards at Fountains." *Nutrition & Food Science* 32, Number 1 (2002): 9.

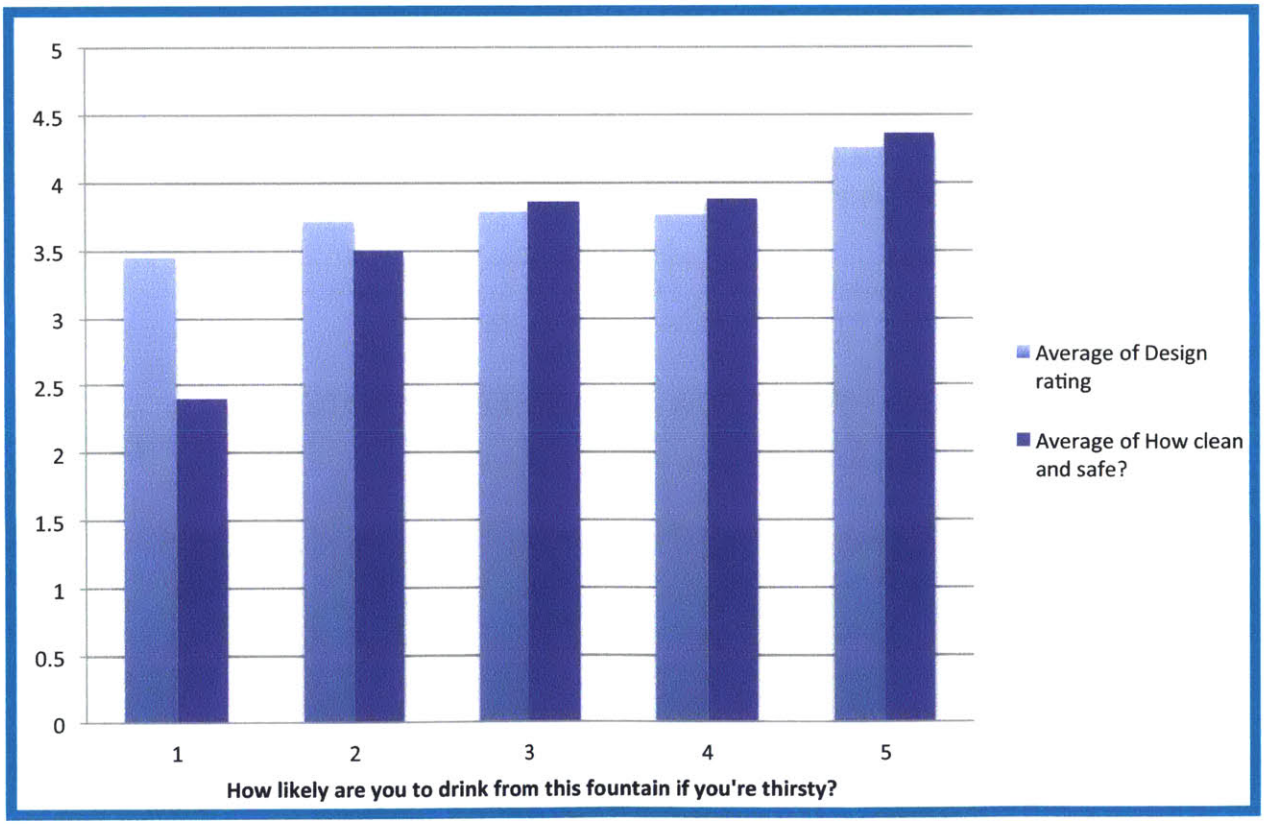
FOUNTAIN OBJECT AND PERCEPTION AS BARRIERS TO WATER



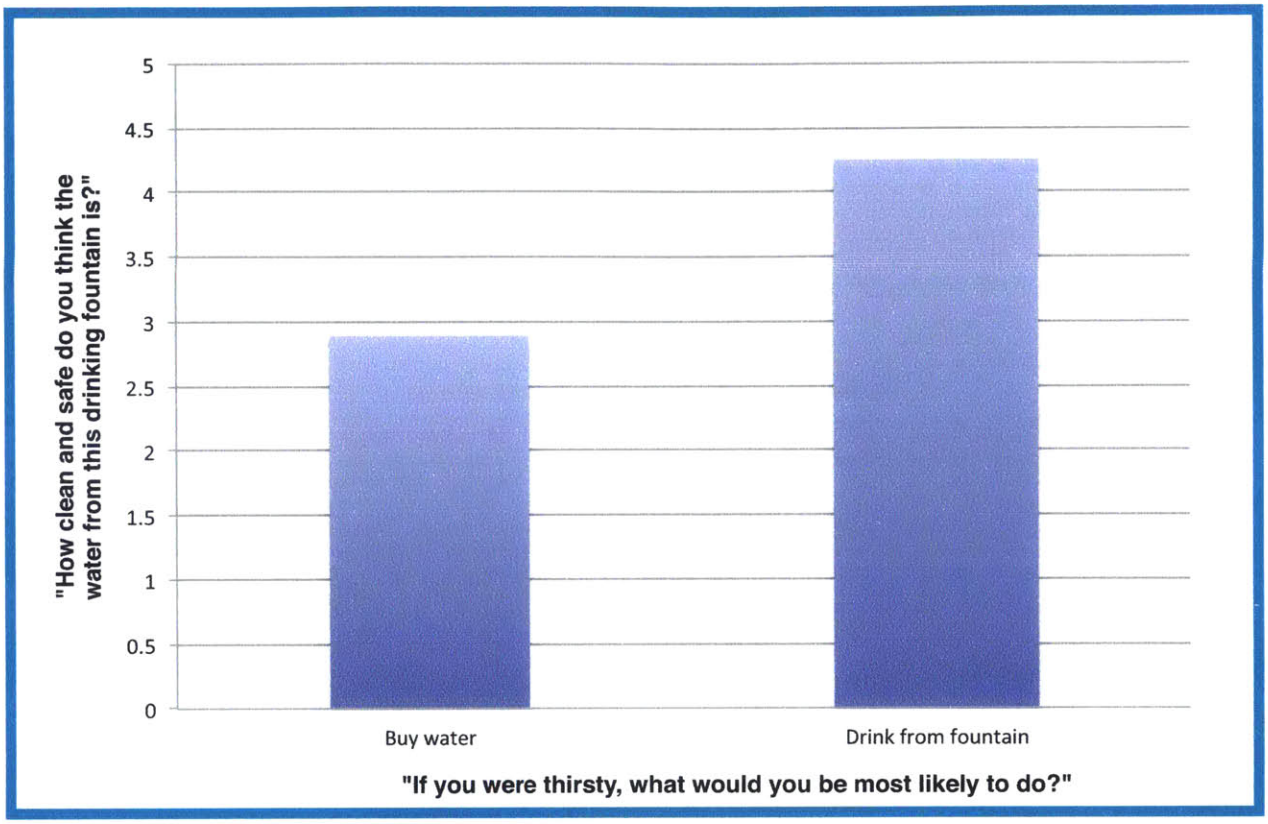
the more likely they were to drink, and the higher a design score they gave, on a scale of 1 to 5, the more likely they were to drink. Those who said they were likely to drink from the fountain if they were thirsty gave the fountains an average cleanliness score of 4.25, while those who said they were likely to buy a bottle of water to quench thirst gave the fountains an average cleanliness score of 2.88 (statistically significant difference: t=5.73). Rating design, those who said they were likely to drink from the fountain gave the fountains an average design score of 4.0, while those who said they were likely to buy a bottle of water gave the fountains an average cleanliness score of 3.46 (statistically significant difference: t=2.11). The "clean and safe" correlation is strong and unsurprising, but the design score is somewhat less intuitive. It suggests that along with good maintenance and low disgust, well-designed fountains can inspire more use.

The first section detailed the current conditions of drinking fountains in the United States. But why should we care? Why should we pay more attention to drinking fountains?

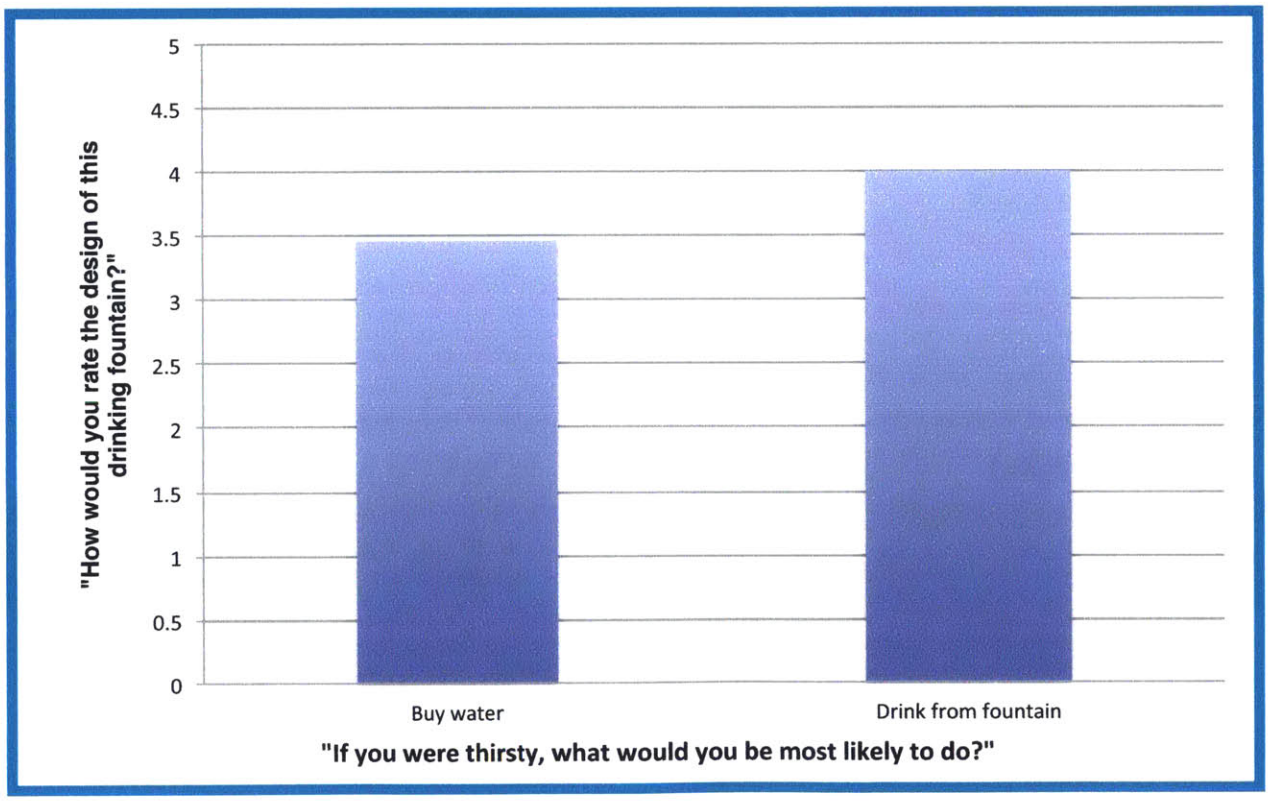
LIKELIHOOD OF USE BY DESIGN AND CLEANLINESS PERCEPTION



SAFETY AND CLEANLINESS PERCEPTION BY THIRST-QUENCHING ACTION

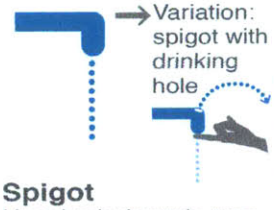


DESIGN RATING BY THIRST-QUENCHING ACTION



DRINKING FOUNTAIN TYPOLOGIES

SPOUT



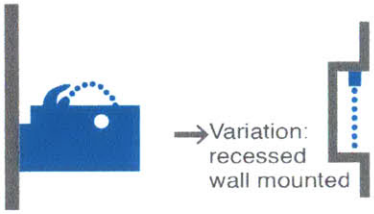
Spigot
Most basic fountain type. Historically, often included a drinking cup. Has now been readopted as a "bottle filler."

Upward bubbler
Invented by Luther Haws in 1906 (and perhaps by others simultaneously), still used in Portland's Benson Bubblers.

Arc bubbler
Easiest to drink from. Used in some Renaissance Roman fountains, and became widespread in the US in the late 1910's.

Arc bubbler with mouth guard
Addressing concerns about mouth contact with the water source, became widespread in the early 1920's.

MOUNTING



Wall-mounted
Most common in indoor settings and in parks with restrooms. Saves money on pipes by double-utilizing "wet walls," but may lead to higher feelings of disgust when water is associated with bathrooms.

Free-standing
Common in parks and in some urban streetscapes. Can be installed anywhere there are underground water and sewer pipes.

ON / OFF

Always on
Visually indicates that fountain is working, lets fountain double as ornamental. Still used in some very wet climates.

Pedal operated
Still found on some historic fountains. Allows fountain use while holding back hair and with one hand full.

Button operated
Evolved to conserve water and allow time for refrigeration. Most common.

Motion activated
Becoming common for no-touch bottle fillers. Can be both cool and frustrating.

ACCESS

Americans with Disabilities Act accessible
ADA compliance requires knee clearance of at least 27" and a spout no highter than 36".

Varied height access
Accommodates people of different heights and bending abilities.

Child accessible
Many fountains include a step-stool so small children can drink by themselves.

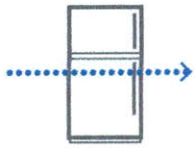
Animal accessible
Horse and oxen troughs used to fill from runoff of human use jets. Today, dog bowls are increasingly popular.

DRINKING FOUNTAIN TYPOLOGIES

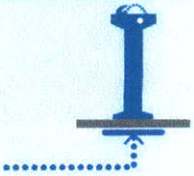
CHILL

Unchilled
Most outdoor drinking fountains are unrefrigerated. Can be unappetizing in hot climates when sited out of shade.

Ice-cooled
Early cooled fountains used ice blocks. Some drinking fountain benefactors specified with their gifts that cities had to keep drinking fountains sup- plied with ice in summer months.



Refrigerated
Many indoor fountains pass water through refrigerated coils before dispensing. Requires electricity.

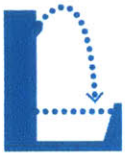


Frost-Proof
Fountains do not store water inside them, requiring a short wait once the button is pushed, but allowing fountains to stay on all winter in cold climates. Great recent innovation.

DRAINAGE

To sanitary sewer
Required by most municipal codes. Leads to wasted water and much higher installation costs.

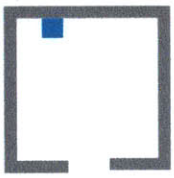
To greywater uses
Makes use of excess water by directing runoff into greywater pipes instead of sewers, so water can be used for irrigation and toilet-flushing.



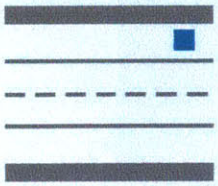
To animal trough
Uses water twice by accumulating excess human water in bowls or troughs for animals to drink from. May be one of few water sources for urban wildlife.

To planter/soak pit
Uses excess water to irrigate adjacent planting or lets water soak into the ground. Saves costs on sewer hook-ups, but illegal in many cities.

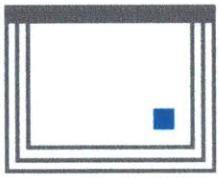
LOCATION



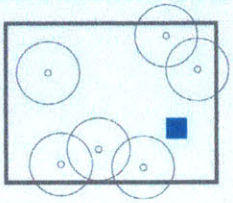
Semi-private space
Airports, civic centers, libraries, etc. Requires entry for use; largely inaccessible to some vulnerable groups, including the homeless.



Urban streetscape
Allows easy access for many different user groups, including tourists. Increasingly rare in the US.



Urban public space
The traditional location for town wells and water sources. Now mostly occupied by non-potable, ornamental fountains.



Park
Most common US location, often required by municipal zoning codes. Some playground fountains are inaccessible to childless adults.

FEATURES

Art
The US has seen a split between ornamental and functional fountains, but with some design love, drinking fountains can double as public art.

Bottles saved count
New combination fountain/bottle fillers often show a digital, realtime count of how many plastic bottles were saved.

Filter status
Some new indoor fountains indicate filter status with green and red lights, giving users more assurance of cleanliness and maintenance.

Information
Many institutions have begun including informational signage about pollution and municipal water testing to encourage drinking fountain use.


HOTEL
Mairie de Paris
Fontaine de l'An 2000

RETHINKING THE DRINKING FOUNTAIN

This section will argue that drinking fountains can make a substantial impact in addressing four key urban issues: environmental sustainability; humanitarianism; human health; and urban design. Through more considered design and placement, drinking fountains may positively impact the future.

ENVIRONMENTAL

Good public space drinking fountains can directly compete with, and reduce reliance on, single-serving bottled water: the environmental need to reduce bottled water consumption is hard to overstate.

In 2012, about ten billion gallons of bottled water were sold in the United States.[62] Each of these bottles represents huge amounts of embodied energy in production, transport, and waste processing. The Pacific Institute estimates that in 2006, when the US consumed about eight billion gallons of water:

- "Nearly 900,000 tons of plastic were used to bottle water.
- Producing the bottles for American consumption required the equivalent of more than 17 million barrels of oil, not including the energy for transportation.
- Bottling water produced more than 2.5 million tons of carbon dioxide
- The manufacture of every ton of PET [polyethylene terephthalate: plastic used for bottles] produces around 3 tons of carbon dioxide (CO2). Bottling water thus created more than 2.5 million tons of CO2 in 2006.
- In addition to the water sold in plastic bottles, the Pacific Institute estimates that twice as much water is used in the production process. Thus, every liter sold represents three liters of water.
- More energy is needed to fill the bottles with water at the factory, move it by truck, train, ship, or air freight to the user, cool it in grocery stores or home refrigerators, and recover, recycle, or throw away the empty bottles. The Pacific Institute estimates that the total amount of energy embedded in our use of bottled water can be as high as the equivalent of filling

62 Julia Lurie, "Bottled Water Comes From the Most Drought-Ridden Places in the Country: Popular brands like Aquafina and Dasani source from catastrophically dry parts of the West." *Mother Jones*, 2014.

a plastic bottle one quarter full with oil."[63]

As Charles Fishman notes, "[Fuji brand bottled water] may come from 'one of the last pristine ecosystems on earth,' as some of the labels say, but out back of the bottling plant is a less pristine ecosystem veiled with a diesel haze."[64]

This analysis does not even delve into the infrastructure required to undertake all of the required transport – indeed, roads are taken for granted much more easily than water pipes are. A semi-truck breaks down roads at about a thousand times the rate of a private automobile,[65] necessitating more new asphalt and more frequent maintenance. The more trucks there are on the road – one of the most common shipping methods for bottled water – the more the roads need to be repaired.

Not only is the energy and waste embedded in production and distribution incredibly high, but the bottles are rarely recycled. Estimates of how many water bottles get recycled vary, but they are all low: between 5% and 25%.[66,67] The California Academy of Sciences estimates that thirty million plastic water bottles per day end up in landfills or the ocean. According to the Center for Biological Diversity,

> "Today billions of pounds of plastic can be found in swirling convergences making up about 40 percent of the world's ocean surfaces...Plastic is so durable that the EPA reports "every bit of plastic ever made still exists." Due to its low density, plastic waste is readily transported long distances from source areas and concentrates in gyres, systems of rotating ocean currents. The North Pacific Gyre, also known as the Great Pacific Garbage Patch, is twice the size of Texas (and growing) and consists mostly of small plastic particles suspended at, or just below, the surface, where fish and other animals mistake the particles for food. The Garbage Patch is only one of five such convergence zones."[68]

Obviously, so much plastic impacts ocean wildlife and the humans

---

63 "Bottled Water and Energy Fact Sheet," Pacific Institute website, 2007, accessed March 23, 2015. http://www.pacinst.org/wp-content/uploads/sites/21/2013/02/bottled_water_and_energy3.pdf

64 Charles Fishman, "Message in a Bottle." *Fast Company Magazine*, July/August 2007.

65 Stephan B. Goddard, *Getting There: The Epic Struggle Between Road and Rail in the American Century* (Chicago: University of Chicago Press, 1994), 251.

66 Peter H. Gleick, *Bottled and Sold: The Story Behind Our Obsession with Bottled Water* (Washington: Island Press, 2010), 97.

67 California Academy of Sciences poster. "{Tap water vs. Bottled Water} Did you know?" Seen 2013.

68 Center for Biological Diversity website. "Ocean Plastics Pollution: A Global Tragedy for our Oceans and Sea Life." http://www.biologicaldiversity.org/campaigns/ocean_plastics/. Accessed March 23, 2015.

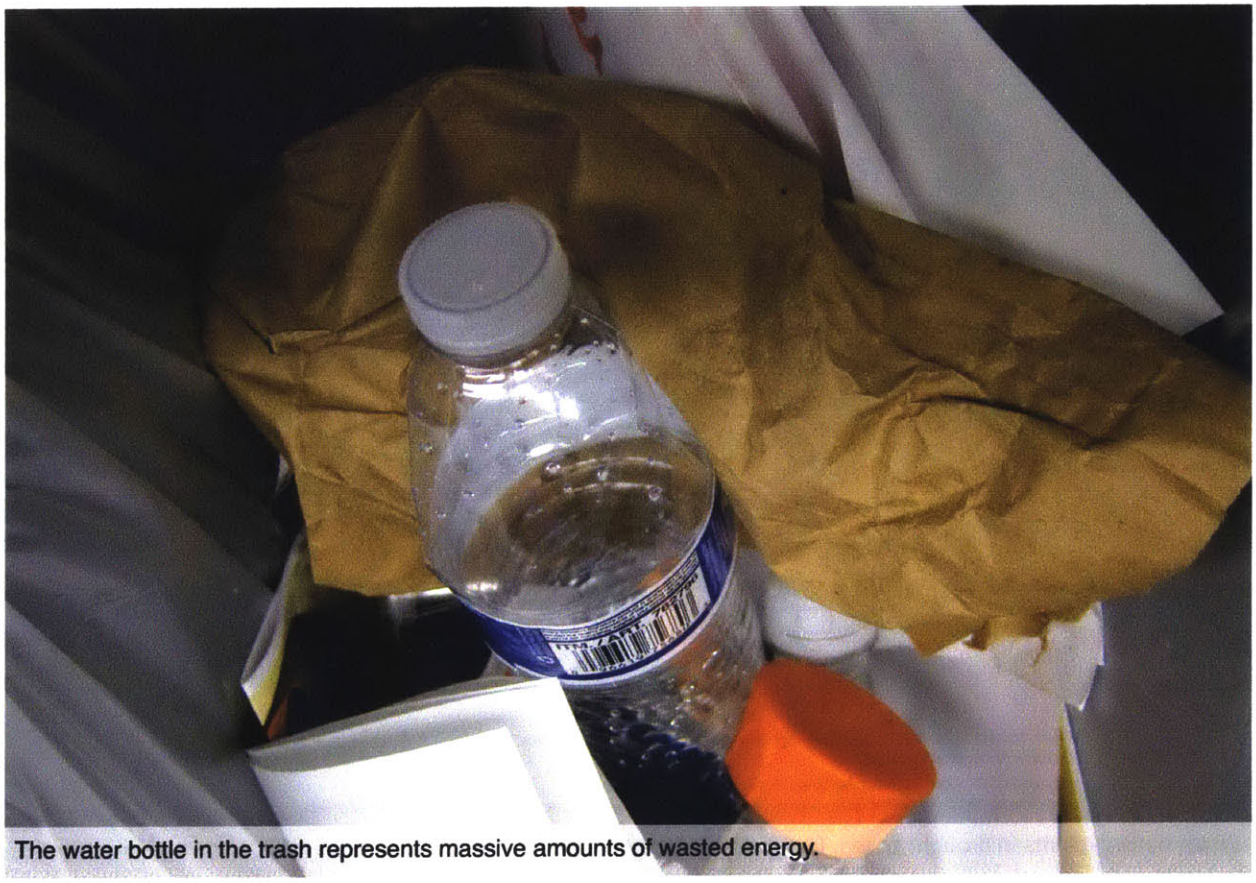
who eat it – "as plastics break apart in the ocean, they also release potentially toxic chemicals such as bisphenol A (BPA), which can then enter the food web. When fish and other marine species mistake the plastic items for food, they ingest the particles and pass toxic chemicals through the food chain and ultimately to our dinner plates."[69] And even in the rare cases that plastic bottles are recycled, the recycling process itself uses major amounts of energy to melt down plastic and then re-constitute it.

Implicitly, the idea of bottled water involves taking water from one place and transporting it to another. This makes some sense when thinking about a water-poor region bringing in water from a water-rich region. But California, currently in one of the worst droughts in history, is home to at least twenty major water bottling plants owned by the four largest bottled water companies, with more than half of these plants in famously water-poor Southern California. Two of the companies, Aquafina and Dasani, use municipal water sources that they filter and then add their own "mineral mix" to.[70] The other two, Arrowhead and Crystal Geyser,

---

69 Center for Biological Diversity website. "Ocean Plastics Pollution: A Global Tragedy for our Oceans and Sea Life." http://www.biologicaldiversity.org/campaigns/ocean_plastics/. Accessed March 23, 2015.

70 Peter H. Gleick, *Bottled and Sold: The Story Behind Our Obsession with Bottled Water* (Washington: Island Press, 2010), 80.



The water bottle in the trash represents massive amounts of wasted energy.

Water bottling plants in drought zones. Images from Mother Jones.

use groundwater sources: interestingly, "California happens to be the only Western state without groundwater regulation or management of major groundwater use. In other words, if you're a water company and you drill down and find water in California, it's all yours."[71] Additionally, in either municipal or groundwater use, "companies aren't required to publicly disclose exactly where their sources are or how much water each facility bottles."[72] A representative from Arrowhead pointed out that many of these bottling plants have been there for decades – but Southern California has always been a desert. Documented extensively in the seminal book *Cadillac Desert,* Southern California gets its water from aqueducts from Northern California, from heavily-battled rivers from Colorado and other snowy regions, and from groundwater, "as nonrenewable as oil."[73] This water, siphoned into plastic bottles, is then loaded onto trucks, trains, planes, and ships and taken back out of California to be sold around the world. A cursory examination of the

---

71 Lurie, Julia. "Bottled Water Comes From the Most Drought-Ridden Places in the Country: Popular brands like Aquafina and Dasani source from catastrophically dry parts of the West." Mother Jones: August 11, 2014.

72 Lurie, Julia. "Bottled Water Comes From the Most Drought-Ridden Places in the Country: Popular brands like Aquafina and Dasani source from catastrophically dry parts of the West." Mother Jones: August 11, 2014.

73 Reisner, *Marc. Cadillac Desert: The American West and its Disappearing Water* (New York: Penguin House, 1993), 9.

Bottled water shelves at Whole Foods, Cambridge.

Whole Foods water aisle in Cambridge, Massachusetts reveals water from nearby Massachusetts, Maine, and New York sources, but also from France, Tennessee, Fiji, and Southern California. More than half of this water has traveled thousands of miles on fossil-fuel powered vehicles to come to Cambridge.

By contrast, municipal water systems are usually powered by gravity. Portland gets its water from Bull Run, just a few miles out of town. The water is treated and passes through pipes, unpackaged and untransported by fossil fuels. Energy is used only to produce and install the pipes (and for any replacement and maintenance of pipes) and at the treatment site. Further, this municipal water supply doubles as conservation lands, as the City owns and manages surrounding open space in addition to the reservoir. This surrounding watershed not only helps to protect the water, but serves as a vital habitat for local species and for human recreation use.

The impacts of bottled water marketing and consumption have been exacerbated by some building codes that allow substituting bottled water for drinking water, like this one from Illinois:

> "Substitution. Whenever a drinking fountain is required by this Part, bottled drinking water or a water dispensing faucet (water station) may be substituted for a drinking fountain, provided that

Poland Spring brand bottled water from Maine

Fiji brand bottled water from Fiji

Pentawater brand bottled water from California

Evian brand bottled water from France

> drinking water is accessible to the public. When bottled drinking water is provided in lieu of a drinking fountain, the bottled water used shall be commercially sealed in accordance with the Illinois Bottled Water Act and the Illinois Safe Bottled Water Act."[74]

Many older schools with concerns about lead in pipes provide free bottles of water to students (a moderate yearly cost), rather than replace pipes (a high upfront cost with very low future costs). A news source quoted a Baltimore school system CEO as saying that, "Parents, students, and teachers prefer the bottled water. Maintenance of the existing water fountains is not worth the expense and concern."[75] But the long-term effects of drinking water that has been sitting in plastic bottles are unknown. Long-term exposure to the chemicals known to leech out of plastics is probably not optimal for health, either.

Awareness about the environmental costs of bottled water is growing, though. A few cities, including San Francisco and Concord, Massachusetts, have enacted municipal bottled water bans, prohibiting the sale of bottled water on city property.[76] Reusable bottles have skyrocketed in popularity in the past several years: in 2009, *Forbes* called Sigg metal water bottles "a lifestyle necessity for the eco-guilty"[77] and reported $70 million in yearly sales (reusable bottles themselves contain their own embodied energy costs, but using the same bottle for a year instead of the average American's usage of 167 disposable bottles[78] has clear advantages). To reduce the major reliance Americans have developed on bottled water, viable alternatives must be in place.

It is likely that many of the times people buy bottled water they'd be just as happy with a few long, cool sips from a drinking fountain. And people may buy or bring bottles because they don't know when they will next encounter a reliable water source. As drinking fountains have disappeared from the public realm, people no longer know when they will be able to get a drink of water next. While a more reliable network should be reestablished, bottle fillers can be a promising measure for those who like to know they'll have water when they're thirsty. A

---

74 "Title 77: Public Health, Chapter 1: Department of Public Health, Subchapter r: Water and Sewage Part 890, Illinois Plumbing Code, Section 890.720 Drinking Fountains." Illinois Plumbing Code website, accessed March 3, 2015. http://www.ilga.gov/commission/jcar/admincode/077/077008900F07200R.html

75 "Lead Prompts Shift to Bottled Water at Baltimore Schools," WBOC.com, 2007, accessed April 16, 2015. http://www.wboc.com/story/7325427/lead-prompts-shift-to-bottled-water-at-baltimore-schools

76 Jane C. Timm, "San Francisco bans sale of plastic water bottles on city property." MSNBC, 2014, Accessed March 23, 2015. http://www.msnbc.com/msnbc/san-francisco-bans-sale-plastic-water-bottles-climate-change.

77 Helen Coster, "The $25 Water Bottle." *Forbes*, 2009, accessed March 23, 2015. http://www.forbes.com/2009/03/19/marketing-environment-celebrities-cmo-network-sigg.html.

78 Charles Fishman, "Message in a Bottle." *Fast Company Magazine*, July/August 2007.

recent Wall Street Journal article reported on the potential impact of the combination of reusable bottles and bottle-filler drinking fountains:

> "Muhlenberg College in Allentown, Pa., began buying Elkay fountains after students campaigned against what they saw as plastic-bottle waste. The college has installed 49 of the devices and says more than 1.4 million plastic bottles have been refilled by them over the past two years. Incoming freshmen receive a free stainless-steel water bottle. David Rabold, capital projects manager at Muhlenberg, says sales of bottled water on campus have fallen 90% since EZH2O fountains were installed."[79]

If this awareness and effort can become truly widespread, drinking fountains and bottle fillers can cut into the bottled water market, with dramatic environmental benefits.

HUMANITARIAN
ETHICAL AND LEGAL IMPLICATIONS OF WATER ACCESS

One of the earliest humanitarian calls for free public water is from King Ashoka's Rock Edicts, considered one of the most important documents of human rights in history (*c.* 256–255 BCE). The collection of rules to live by was carved into rocks throughout South Asia. The second edict tells of hospitals established for men and animals, and that, "On the roads wells were caused to be dug, and trees were caused to be planted for the use of cattle and men." This is an ethical call for the improvement of the public realm for travelers – Ashoka promoted travel through building roads and rest houses, as well. People at home would have had access to water as towns were built on lakes and dams, but this Edict acknowledges a need for access for everyone, including those passing through. Siting wells along a road would have made them easy to find for strangers and open to rich and poor alike. Streets, the continuous public mixing place, are the logical place for a public service to be located.

According to Bruce Rich, author of a book on Ashoka's ethical framework, the Rock Edicts reflect a primacy of respect for life and the ethical imperative for governments to act with beneficence. "There is clearly a notion of public good and the role of the state to make expenditures and donations through public works, in marked contrast to the mantra of privatization that has dominated much economic and political thinking over the past decade." Rich states that, "Contrary to what one would expect or hope, the richer our world becomes as an economic system, the more the collective imagination of those who rule seems to atrophy so that all common goals collapse into efforts to increase production

---

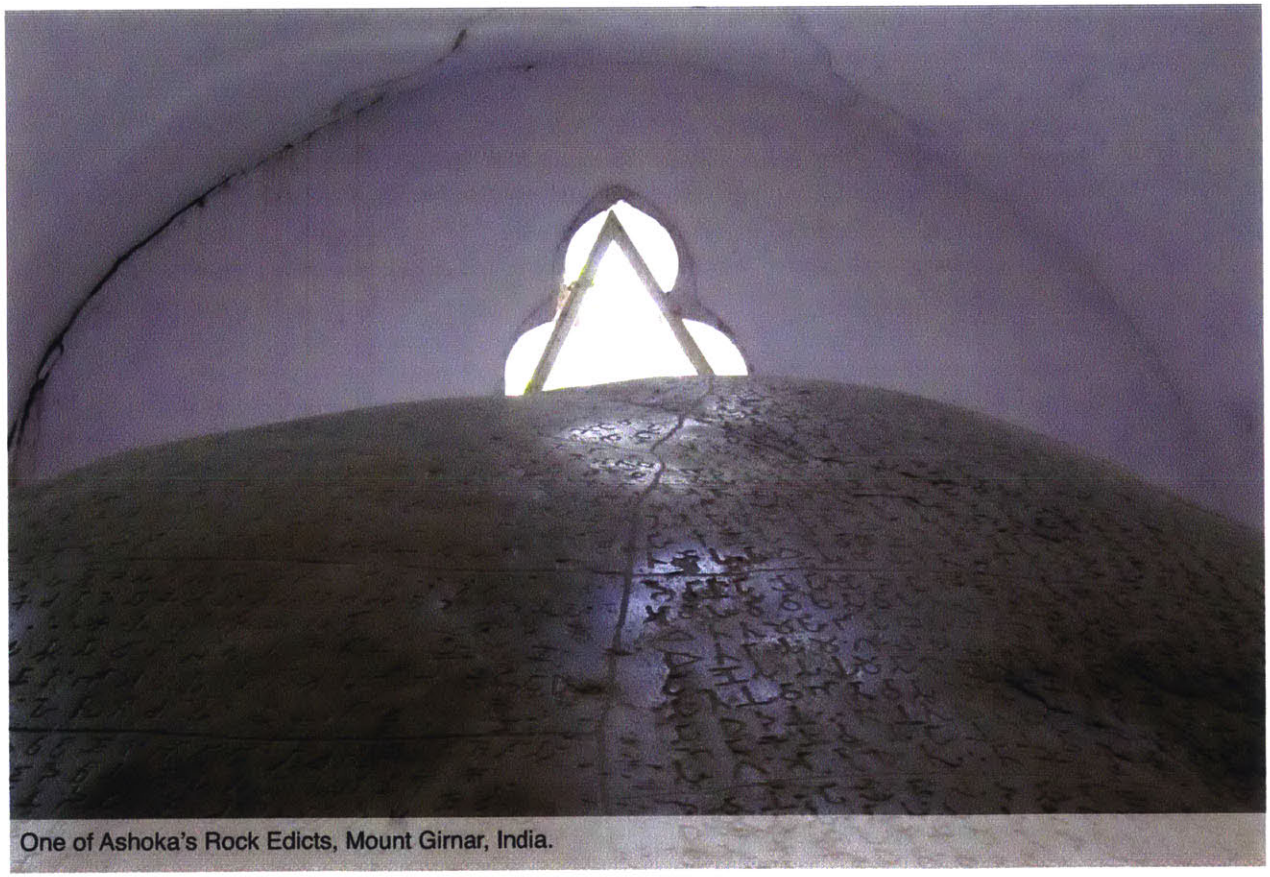
79 James R. Hagerty, "With Bottle-Fillers in Mind, The Water Fountain Evolves." *The Wall Street Journal,* 2013.

and trade."[80] The Rock Edicts can act as a reminder for the ethical importance of government-provided water access.

Beyond the purely ethical imperative, there is a legal framework for the government's responsibility to provide water. According to Peter Gleick, a water issues researcher and founder of the Pacific Institute, a right to water is implied by the United Nation's 1948 Universal Declaration of Human Rights.

> "In 1948 the United Nations General Assembly approved the universal declaration of human rights (UDHR) by 48 votes, with eight abstentions. The reworded Article 22, now Article 25 of the Declaration, was adopted unanimously and states (UN General Assembly, 1948): "Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing." Logic...suggests that the framers of the UDHR considered water to be implicitly included as one of the 'component elements' - as fundamental as air...Meeting a standard of living adequate for the health and wellbeing of individuals requires the availability of a minimum amount of clean water. Some basic amount of clean water is necessary to prevent death from dehydration, to reduce the risk

80 Bruce Rich, *To Uphold the World: A Call for a New Global Ethic from Ancient India*, (Boston: Beacon Press, 2010), 5.



One of Ashoka's Rock Edicts, Mount Girnar, India.

> of water-related diseases and to provide for basic cooking and hygienic requirements. This fact has long been recognized by the World Health Organization and other UN and international aid agencies that specify basic water standards for quantity and quality."
>
> If we accept that there is a human right to water, to what extent does a State have an obligation to provide that water to its citizens? While the many international declarations and formal conference statements supporting a right to water do not directly require States to meet individuals' water requirements, Article 2(1) of the ICESCR obligates States to provide the institutional, economic and social environment necessary to help individuals to progressively realize those rights. In certain circumstances, however, when individuals are unable to meet basic needs for reasons beyond their control, including disaster, discrimination, economic impoverishment, age or disability, States must provide for basic needs (Gleick, 1996)."[81]

Understanding the government's legal responsibility to provide water to those who cannot meet those needs, drinking fountains emerge as the easiest way to meet that obligation. In some instances, however, drinking fountains have been made inaccessible as a refutation of human dignity.

EXCLUSION

Under the United States' legalized racial segregation, or "Jim Crow," laws, mandating separate but equal facilities and sanctioned by the Supreme Court's 1896 decision in Plessy v. Ferguson, Southern drinking fountains were labeled "White" or "Colored." In her autobiography, Rosa Parks wrote that, "the public water fountains in Montgomery had signs that said 'White' and 'Colored.' Like millions of black children, before me and after me, I wondered if 'White' water tasted different from 'Colored' water. I wanted to know if 'White' water was white and if 'Colored' water came in different colors."[82]

The objects themselves reinforced the subtext that these were not equal: many photos from the era show high-quality fountains for white users with small, flimsy, clearly unequal fountains clumsily bolted to nearby walls. The pipes visibly carry water from the "white" to the "colored" fountains, visually implying that the water is used first by the "white" population and second by the "colored" population. Powerful undercurrents of disgust and hatred are at play here in a refusal to share water and a belief that mouths of one's own race are cleaner than mouths of other races. The visual symbol of white people using water first, before it touches black lips, reinforces cultural hierarchies and

---

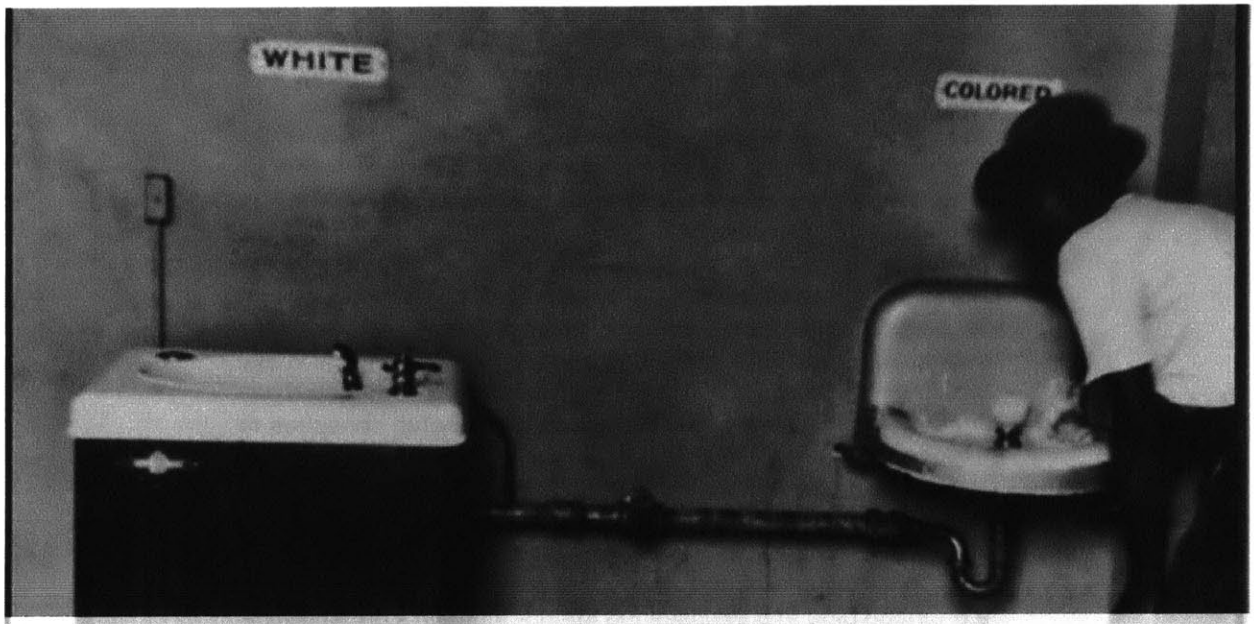
81 Peter H. Gleick, "The human right to water." *Water Policy* 1 (1998): 487-503.

82 Rosa Parks and Jim Haskins, *Rosa Parks: My Story,* (New York: Puffin Books1992), 46.

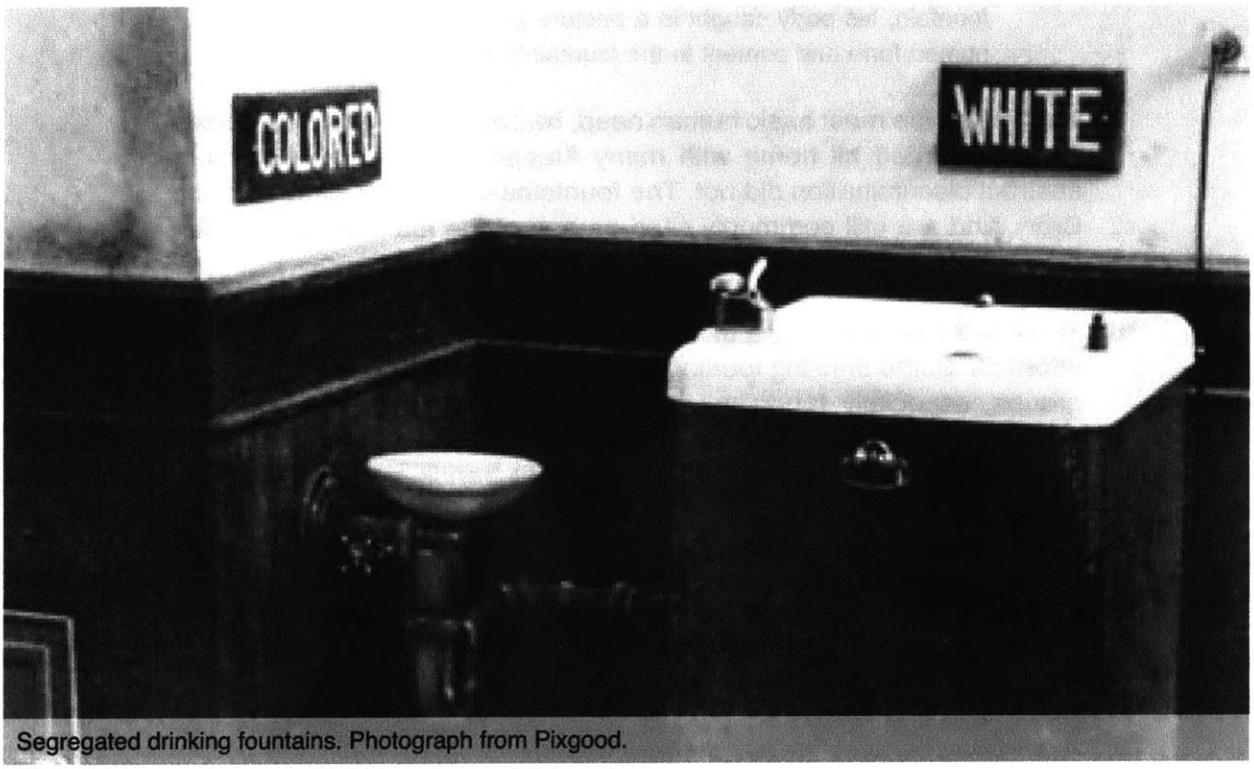
firmly reminds users that nothing separate is equal. Further, according to Elizabeth Abel, author of the paper, "Bathroom Doors and Drinking Fountains: Jim Crow's Racial Symbolic," many of the "white" fountains were actually taller than the "colored" fountains. In her reading, the fountains' "differential height constructs race as an adult/child relation."[83]

---

83 Elizabeth Abel, "Bathroom Doors and Drinking Fountains: Jim Crow's Racial Symbolic," *Critical Inquiry* 25, Number 3: (1999): 435-481.



North Carolina, Segregated Water Fountains, 1950. Photograph by Elliott Erwitt.



Segregated drinking fountains. Photograph from Pixgood.

According to Abel, separate drinking fountains were by no means the worst of the Jim Crow practices, but the images of the separate objects published around the country were some of the most powerfully galvanizing images in the Civil Rights movement:

> Drinking fountain photographs have a distinctive currency as illustrations of Jim Crow. Despite their relatively small numbers (they comprise, for example, only 10 percent of the FSA-OWI discrimination signs collection, which more intensively documents waiting rooms, movie theaters, and restaurants) and the relatively minor impact of the particular discrimination they document, these images, together with those of bathroom doors they distill and displace, have achieved an emblematic status as signifiers of Jim Crow. In contrast to other segregated settings whose geography suggests more ambiguous social relations (such as the placement of the "colored" balcony above the "white" mezzanine), or which are spatially so divided they cannot be encompassed within a single photographic frame (such as segregated housing or schools), or which offer no obvious visual correlative to the inequality they impose (such as segregated pay lines), everything about the fountains' visual setup conspires to expose the "mark of oppression" that constituted the governing liberal metaphor of race from the late 1940s through the early 1960s....And the juxtaposition of the signs' formal equality with the substantive inequality between the refrigerated "white" cooler and the ancillary "colored" basin, yoked by the extended arm of a drainage pipe that exposes the inferior fountain's dependency, suggests the social compromise of gender. ...[The photograph] represents a black man stooping over to drink at the "colored" fountain, his body caught in a posture of submission that gives human form and content to the fountain's second-class status.[84]

That water, the most basic human need, had been so crassly politicized and segregated hit home with many Americans in a way that more abstract discrimination did not. The fountains acted as a symbol of Jim Crow, and are still commonly cited as one of the main features of the American apartheid.

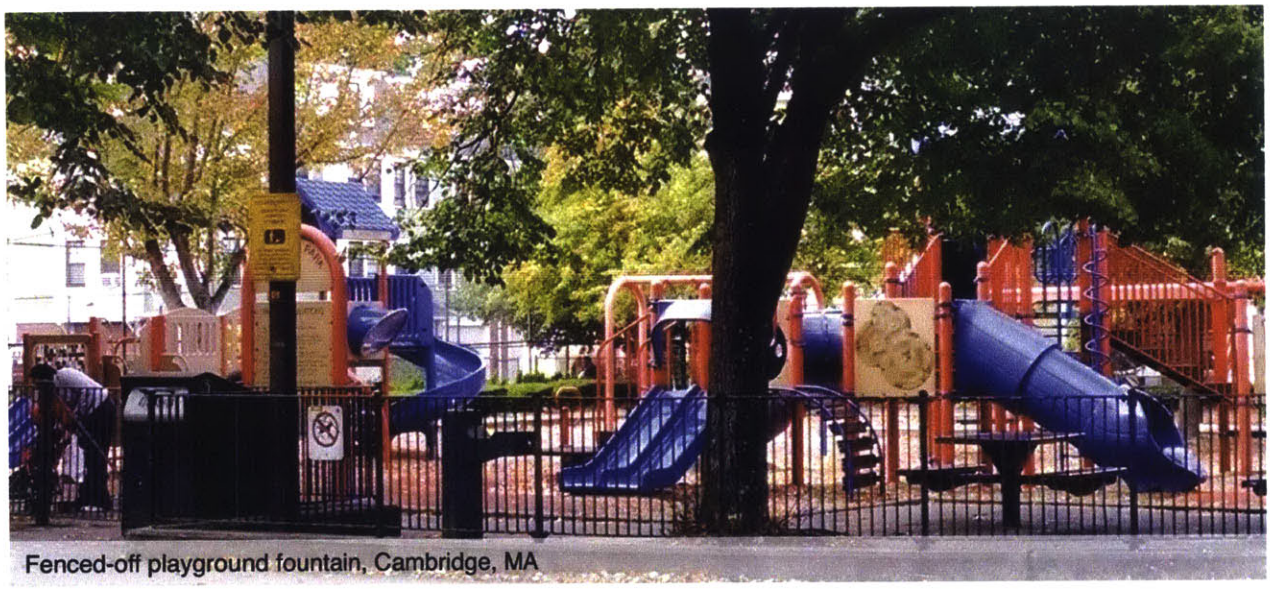
There is a newer example of exclusion that has not yet received public attention. Some drinking fountains have become inaccessible to certain groups, especially fountains placed within playground fences. Near or within a playground is the most common contemporary outdoor drinking fountain location, and child-safety trends have dramatically increased fencing around playgrounds, especially in urban areas. Fears of "stranger danger" have more recently led to laws in some cities and states prohibiting childless adults from entering playgrounds. San Francisco playgrounds all have signs posted, reading, "No adults

---

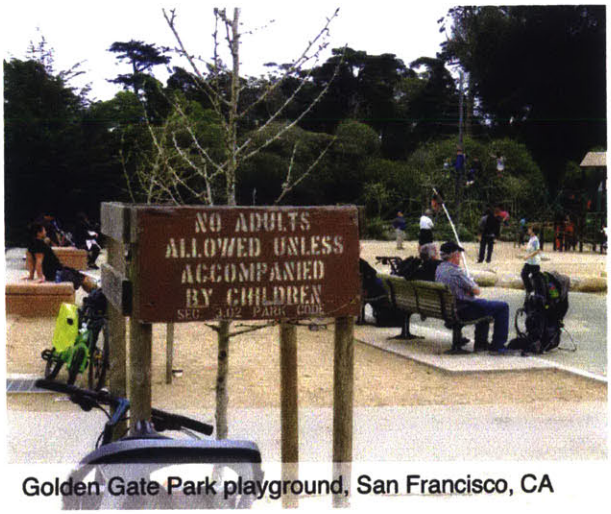
84 Elizabeth Abel, "Bathroom Doors and Drinking Fountains: Jim Crow's Racial Symbolic," *Critical Inquiry* 25, Number 3: (1999): 435-481.

allowed unless accompanied by children."

Who suffers from these laws and regulations? It's not hard to speculate that men (and especially minority, adolescent and homeless men) are disproportionately affected. Childless women may still feel like it's acceptable to go inside the fence for a drink of water, implicitly understanding that "threatening-looking" men are the true targets of the posted signs. As a result, men may have less access to public drinking water than women. For any adult, these drinking fountains, ostensibly in public spaces, have become off-limits to some degree. This insight leads to a further speculation: is there a perception that drinking fountains are for children, not grown-ups? Current installation patterns suggest that children are prioritized, perhaps with the implicit assumption that adults should be better able to obtain their own liquids.



Fenced-off playground fountain, Cambridge, MA



Golden Gate Park playground, San Francisco, CA

Fenced-off playground fountain, Cambridge, MA

WHO SHOULD HAVE ACCESS TO FREE PUBLIC WATER?

Beyond the obvious and easy answer of providing water in places that children frequent, such as school cafeterias and playgrounds, there are many others who should have access to free public water on a daily basis.

HOMELESS POPULATIONS:

The U.S. Department of Housing and Urban Development estimates that more than 600,000 people experienced homelessness on a given night in 2013, and other estimates put the number of people who experience homelessness within a given year between 2.3 and 3.5 million.[85] Of these people, many lack access to basic water and sanitation services. Gliek's argument about the human right to water implicitly refers to the homeless: "when individuals are unable to meet basic needs for reasons beyond their control, including disaster, discrimination, economic impoverishment, age or disability, States must provide for basic needs." In this reading, it is the government's explicit responsibility to make sure that individuals unable to meet basic needs, including for reasons of economic impoverishment, have access

85 "A New Look at Homelessness in America," The Urban Institute, 2000. http://webarchive.urban.org/publications/900366.html

Shards of soap on a Houston drinking fountain in an area frequented by homeless people show the importance of the drinking fountain as a multi-use water source for some. Allen's Landing fountain, Houston, TX.

to basic water. Public, readily accessible drinking fountains are the simplest way to meet this obligation. Shards of soap left on a drinking fountain in a corner of downtown Houston frequented by homeless populations demonstrated that the sad, hot drinking fountain there was the only source of water that some people had access to. Side spigots on drinking fountains, sometimes called jug fillers, may be beneficial for people who need water for washing, and could alleviate some concerns about the cleanliness of using the drinking arcs for multiple hygiene needs.

But some cities, including Sacramento, have taken the opposite approach. In 2011, the *Huffington Post* reported that in Sacramento, "efforts to discourage homeless individuals and families from taking shelter in a growing tent city have included shutting off the water supply to nearby a fountain and locking or removing public restroom facilities."[86] UN Special Rapporteur Catarina de Albuquerque issued a report to the United Nations Human Rights Council on the human rights violations towards the Sacramento homeless. Concurring with the report, a Homelessness Law group spokesperson stated that, "No government should use access to life-sustaining services as a weapon to stigmatize and discourage the behavior of homeless people. We intend to hold Sacramento accountable to human rights standards."[87] Instead of reprehensibly using drinking fountains to further harm and punish vulnerable populations, local governments should strive to uphold these peoples' dignity and human rights, and provide water to all those who need it.

PEOPLE WITH LOW INCOMES:

Insufficient provision of public water affects the poor most, as the same expenditures on bottled water or other beverages represent a much higher proportion of their income. For example, the average American uses 167 bottles of water, and an average bottle costs around $2, costing the average American $334 per year.[88] The United States poverty threshold for a one-person household in 2013 was $11,888 per year.[89] Those 167 bottles of water would represent almost 3% of this individual's total income. By contrast, for an individual earning $60,000 per year, that same amount of bottled water would represent only 0.5% of the total income, or 0.2% of an annual salary of $150,000. Assuming that every human feels thirst at about the same rate and that thirst is

---

86 Janell Ross, "U.S. Cities Criminalize Homelessness, Violate Human Rights Agreements," Huffington Post, 2011.

87 "UN to Sacramento: You're Violating Human Rights of Homeless People," Homelessness Law website, 2012. Accessed April 16, 2015. http://homelessnesslaw.org/2012/02/un-to-sacramento-youre-violating-human-rights-of-homeless-people/

88 Charles Fishman, "Message in a Bottle." *Fast Company Magazine*, July/August 2007.

89 "How the Census Bureau Measures Poverty," US Census Bureau website, accessed March 21, 2015. http://www.census.gov/hhes/www/poverty/about/overview/measure.html.

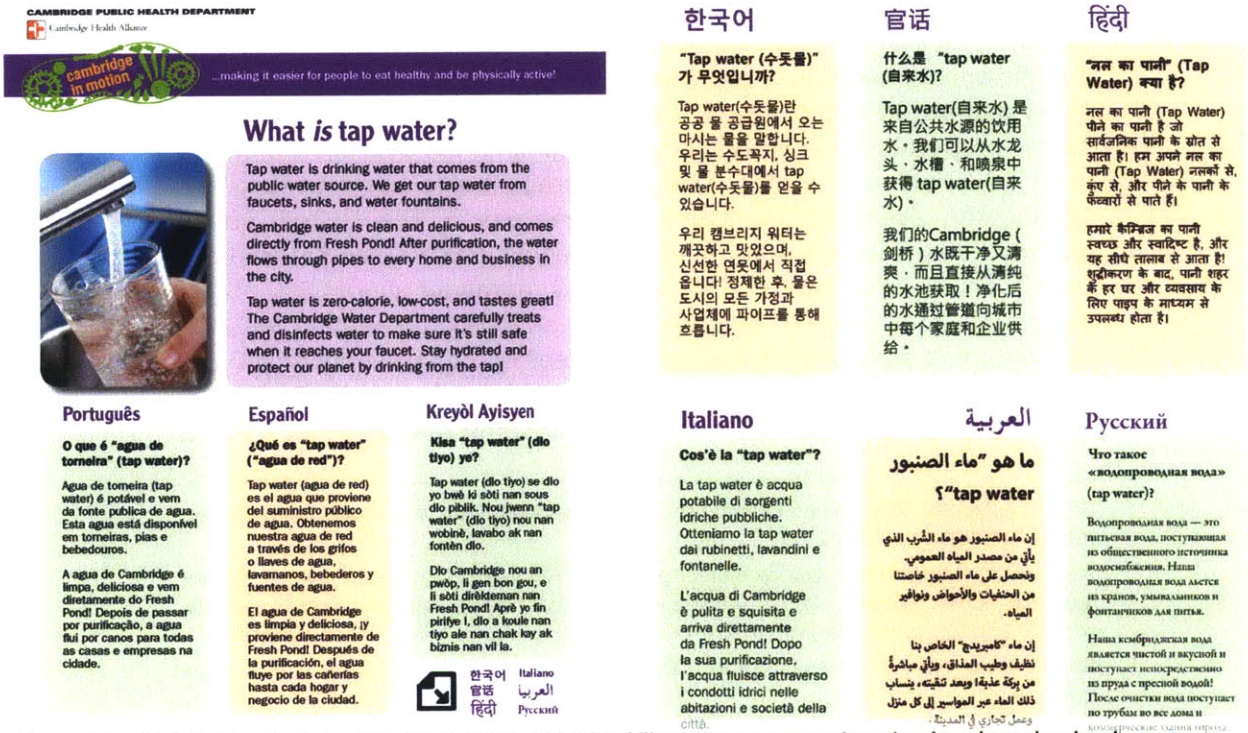
independent of income, those with lower income disproportionally bear the costs of poor public water access. In a place where bottled water is the only accessible option, those with less means and no carried bottle from home must either feel greater thirst or pay disproportionately more to have their thirst sated.

The Wall Street Journal recently reported on inflated prices for bottled water in places where people are "captive," especially at airports and sports arenas. Noting that a bottle of water typically costs at least $4 at a sports arena, and that a large bottle of Smartwater costs $5.43 at New York's JFK airport, the *WSJ* reported that water was the top selling product for airport retailers. In 2013, "food and beverage spending at airports increased to $5.68 per passenger,"[90] a figure likely linked with airport regulations limiting people from bringing more than 3 ounces of liquid through security. For those with limited means, accessing airplane flight and sporting events is likely a major drain on finances; adding the burden of $4 bottled water with few or no alternatives becomes a major hardship.

Further, low quality – or perceived low quality – tap water affects the poor more. According to a paper from the BPD Water and Sanitation

---

90 Scott McCartney, "The Price You Pay for Water at the Airport." *The Wall Street Journal*, 2015.



Cambridge Public Health Department/Cambridge Health Alliance tap water education brochure in nine languages. Image courtesy of the Cambridge Health Alliance.

Cluster, "insufficient monitoring of drinking water quality affects the poor most, as their financial means to pay for coping strategies (e.g. boiling water, filters) are much less."[91] As discussed earlier, perception of safety is one of the key factors in someone's likeliness to drink from a drinking fountain. A belief that water is unsafe leads to either lower water consumption or higher expenditure. And as several studies discussed earlier establish, people from low income families and some immigrant groups may actually have a higher mistrust of public water than others, making them potentially more susceptible to bottled water advertising and purchase prices, or more likely to buy less healthy beverages instead of drinking tap water. To counter-balance this tendency, the Cambridge Department of Human Services publishes its tap water promotion materials in nine languages to try to give all residents access to information about tap water safety.

EVERYONE:

In the case of the University of Central Florida stadium that was built without drinking fountains, in which seventy-eight people required medical attention for heat-related illness at a single game during hot weather, drinking fountains take on an urgency for all different types of people. The need for water is a universal human need, and most people seem to agree that water should be available when people need it. A scandal erupted for Starbucks in 2001 when news came out that ambulance workers went inside a New York City location to get water for victims of the 9/11 Twin Tower attacks, but were charged $130 for three cases of water by a low-level employee.[92] There is a general sense that a drink of water should be free, especially in an emergency. Several states have Good Samaritan "duty to rescue" laws,[93] but despite persistent urban legends, restaurants and other establishments have no legal obligation to provide a drink of water to anyone who asks.[94] It is easy to imagine which classes and types of people might be more likely to ask for and receive drinks of water at establishments – people who look like they can pay for other things. The embodied privilege of obtaining private water reinforces the ethical imperative to provide it for everyone, in an equally accessible, public location.

---

91 Sophie Trémolet and Sara Browning, "The Interface Between Regulatory Frameworks and Tri-Sector Partnerships," (London: BPD Water and Sanitation Cluster, 2002), 4.

92 "Starbucks charged rescuers for water." *The Guardian*, 2001, accessed March 22, 2015. http://www.theguardian.com/world/2001/sep/26/september11.usa3.

93 "Duty to Rescue," *Wikipedia,* accessed March 28, 2015. http://en.wikipedia.org/wiki/Duty_to_rescue

94 Snopes message board. http://message.snopes.com/showthread.php?t=43247. Accessed March 22, 2015.
"Is it illegal for a restaurant to refuse to give water?" Reddit comment thread, accessed March 22, 2015. http://www.reddit.com/r/orlando/comments/2ehz52/is_it_illegal_for_a_restaurant_to_refuse_to_give/.

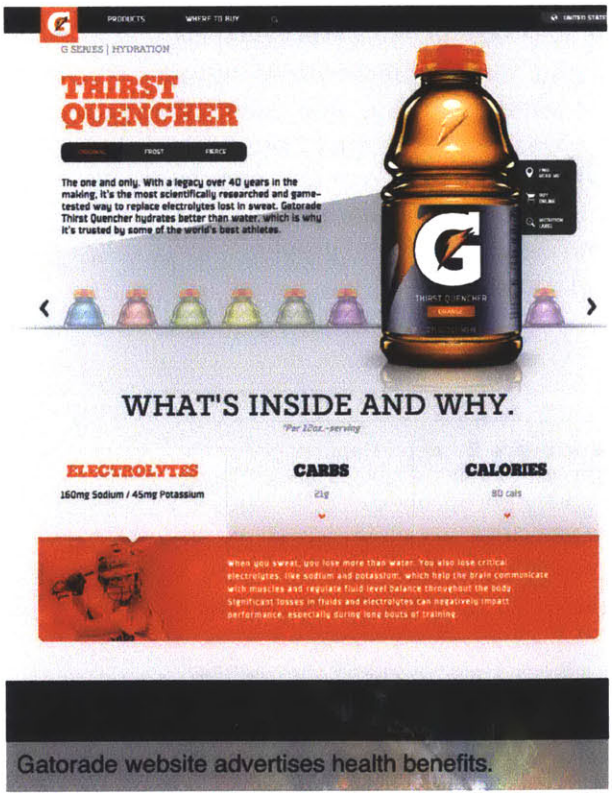
HEALTH

Temperance and disease-avoidance fountains targeted 19th-century health concerns of alcoholism and water-borne diseases, but drinking fountains can also address many of today's health problems. In the United States, lifestyle-related diseases have become the top causes of mortality; together, heart disease and diabetes accounted for over 25% of all deaths in the United States in 2013. To limit risks of heart disease and diabetes, the United States Center for Disease Control recommends eating a healthy diet, maintaining a healthy weight, and exercising regularly.[95] Free public drinking water can help people meet these recommendations by replacing sugary beverages and by facilitating exercise, helping to reduce lifestyle-related disease and mortality.

REPLACING SUGARY BEVERAGES

Beyond the environmental imperative to reduce use of plastic bottles containing water lies the health crisis linked with overconsumption of sugary beverages. Like bottled water, this industry contributes to huge amounts of plastic waste, but also contributes substantially to poor public health. US consumption of sugary beverages has grown steadily

95 "Number of Deaths for Leading Causes of Death," and "Heart Disease Prevention: What you can do," United States Center for Disease Control website, 2013, accessed March 12, 2015. http://www.cdc.gov/nchs/fastats/leading-causes-of-death.htm,



Gatorade website advertises health benefits.

Vitamin Water website touts product as "nutritious."

over the past 40 years.[96] Initially contained mainly in the soda market, the sugary drink market share has expanded to include supposed health products like fruit juices, energy drinks, coffee beverages, and flavored (sugared) water. Vitamin Water, for example, is a Coca-Cola product that they call a "nutrient enhanced water beverage." A standard 20-ounce bottle of "orange-orange" flavored Vitamin Water contains vitamins A, B, C, E, niacin, and potassium, but it also contains 120 calories and 32 grams of sugar in the form of crystalline fructose and cane sugar.[97] The World Health Organization recommends limiting total daily sugar intake to 25 grams of sugar,[98] and the USDA recommends that the typical adult eat about 2,000 calories per day, making one bottle of supposed health water represent 6% of a day's total calories and 128% of recommended daily sugar intake.

According to a 2012 Harvard School of Public Health "Sugary Drink Supersizing and the Obesity Epidemic" fact sheet,

- "One study found that for each additional 12-ounce soda children consumed each day, the odds of becoming obese increased by 60% during 1½ years of follow-up.
- People who consume sugary drinks regularly—one to two cans a day or more—have a 26% greater risk of developing type 2 diabetes than people who rarely have such drinks.
- On any given day, half the people in the United States consume sugary drinks; 1 in 4 get at least 200 calories from such drinks; and 5% get at least 567 calories—equivalent to four cans of soda. Sugary drinks (soda, energy, sports drinks) are the top calorie source in teens' diets (226 calories per day), beating out pizza (213 calories per day).
- A study that followed 40,000 men for two decades found that those who averaged one can of a sugary beverage per day had a 20% higher risk of having a heart attack or dying from a heart attack than men who rarely consumed sugary drinks.
- Studies in children and adults have found that reducing sugary drink consumption can lead to better weight control among those who are initially overweight."[99]

Despite the evidence that overconsumption of sugary beverages leads to massive public health problems, consumers continue to buy them, probably due to massive marketing campaigns that portray the beverages in positive lights. In 2008, Coca Cola spent $53.8 million

---

96 "Fact Sheet: Sugary Drink Supersizing and the Obesity Epidemic," Harvard School of Public Health, 2012, accessed March 12, 2015.

97 "Vitamin Water Nutrition Facts," Vitamin Water website, accessed March 8, 2015. www.vitaminwater.com.

98 "WHO opens public consultation on draft sugars guideline," World Health Organization website, 2014, accessed March 12, 2015. http://www.who.int/mediacentre/news/notes/2014/consultation-sugar-guideline/en/

99 "Fact Sheet: Sugary Drink Supersizing and the Obesity Epidemic," Harvard School of Public Health, 2012, accessed March 12, 2015.

dollars marketing Vitamin Water. It was one of the top ten most expensive marketing campaigns for sugary drinks that year, exceeding spending on Dr. Pepper and 7-Up,[100] - and cost more than ¾ of the Portland, Oregon Water Bureau's entire 2008-2009 operating budget.[101] And this marketing appears to be quite effective. In a 2014 survey of parents' beliefs about healthfulness of different beverages found that,

> "parents may select Vitamin Water, Sunny D, Red Bull, Capri Sun Roarin' Waters and Snapple because they believe that they are nutritious options for their child. Of note, in a lawsuit against Vitamin Water, the company's defense stated, 'No consumer could reasonably be misled into thinking Vitamin Water was a healthy beverage'. Yet 51% of parents in the current sample purchased Vitamin Water for their child and 78% of those who purchased it rated it as healthy."[102]

Nobody names a product "Vitamin Water" without hoping it will project healthfulness to potential consumers; a growing demand for healthier foods has driven many of the product decisions by major beverage producers. According to the Pepsico website, 49% of their beverage sales (by volume) are in "low- or zero-calorie drinks (e.g. Aquafina, Pepsi Next, and Diet Mtn Dew), juices (e.g. Tropicana and Naked Juice), and active hydration beverages (e.g. Gatorade and G2)," up from less than 25% fifteen years ago.[103] This illustrates growing consumer desires for healthy beverages, but the misleading health claims made by these companies, and the incentives of the massive market for them, creates an atmosphere of continued unhealthy consumer choices.

In contrast, the US Dietary Guidelines Advisory Committee's 2015 report states that "strategies are needed to encourage the U.S. population to drink water when they are thirsty."[104] While recognizing that drinking water to quench thirst is healthier than drinking anything else, the guidelines fail to specify which strategies should be used to encourage consumption of water over sugary beverages.

One such strategy is locating drinking fountains and bottle fillers where people might otherwise buy sugary beverages, such as near eating areas, tourist areas, in transit stations, and in schools. This growing recognition of links between health and access to drinking fountains is

---

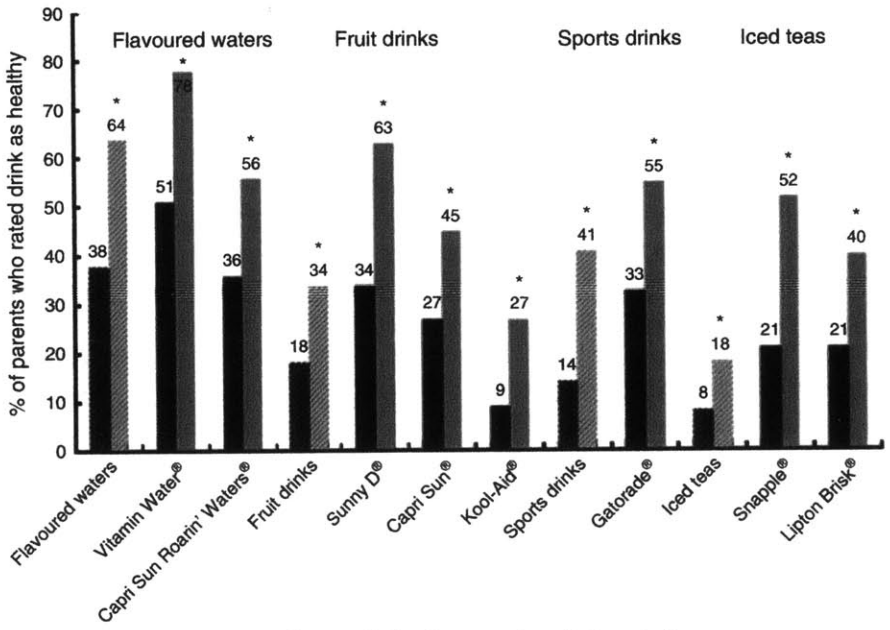
100 "Sugary Drink FACTS: Advertising Spending," Rudd Institute website, accessed March 12, 2015. http://sugarydrinkfacts.org/resources/SugaryDrinkFACTS_Ranking_AdvertisingSpending.pdf

101 "Adopted Budget In Brief; City of Portland, Oregon Fiscal Year 2008-09." City of Portland website, accessed March 20, 2015. https://www.portlandoregon.gov/cbo/article/204579.

102 CR Munsell et al. "Parents' beliefs about the healthfulness of sugary drink options: opportunities to address misperceptions," *Public Health Nutrition*, 2015.

103 "Pepsico Beverage Facts," Pepsico website, accessed March 9, 2015. http://www.pepsicobeveragefacts.com/home/caloriebalance.

104 Mark Bittman, "How Should We Eat?" *The New York Times*, 2015.



Parents' beliefs about sugary drinks. Image from CR Munsell et al.

reflected in a few new school laws. In their 2014 article, "Tapping Into Water: Key Considerations for Achieving Excellence in School Drinking Water Access," Patel et al. write that,

> "although historically some states did specify that a certain number of water access points (i.e., drinking fountains) be available per a certain number of students, there was generally no guidance regarding the location of those fountains. However, now both federal and some state laws require that free water be available in cafeteria areas. In September 2010, California enacted SB 1413, legislation that requires kindergarten to 12th grade public schools to provide access to free drinking water during meal times in school food service areas (FSAs), defined in California law as locations where meals are served or eaten. In December 2010, the president signed the Healthy, Hunger-Free Kids Act of 2010, which includes a provision requiring access to free drinking water where meals are served (but not where they are consumed)."[105]

At the time of the study, though, only 36% of school administrators had heard of either of these laws, and most schools did not meet basic drinking fountain standards. Presumably, new schools will reflect the codes to a greater extent than older schools. And while providing a basic source of water in schools as a free alternative to sugary beverages is

105 Patel et al. "Tapping Into Water: Key Considerations for Achieving Excellence in School Drinking Water Access." *American Journal of Public Health* 104, Number 72014 (2014): 1314-1319.

a good start, adults need these healthy alternatives, too. Further, these new laws do not recognize the importance of water appeal.

Together, Pepsico and Coca-Cola spent about $610 million dollars on advertising sugary beverages in 2008.[106] Can a tepid, dirty-looking drinking fountain tucked next to the bathroom and garbage compete with a lighted, refrigerated, glowing Coke machine that dispenses meticulously designed bottles of cold, sugary liquid?

A five-week school intervention study (with experiment and control schools) concluded that, "provision of filtered, chilled drinking water in school cafeterias coupled with promotion and education is associated with increased consumption of drinking water at school,"[107] demonstrating that there are significant possibilities for making a dent in the sugar-sweetened beverage market. The Recommendations Section will look at further ways to promote plain old water over sugary beverages via the public drinking fountain.

EXERCISE

In 2013, the United States Centers for Disease Control and Prevention reported that 80% of American adults do not get recommended amounts of weekly exercise: at least 150 minutes of moderate-intensity activity (like brisk walking) or 75 minutes of vigorous activity (like running). According to the CDC, only 20.6 percent of Americans get this much exercise, and with men and younger adults more likely to than women or the elderly. Another 2012 study estimated that physical inactivity caused 9% of worldwide premature deaths in 2008, or around 5.3 million. It further estimated that if activity increased by 25%, more than 1.3 million worldwide deaths would be averted each year.[108] The United States is the clear leader in these physical inactivity deaths, and therefore one of the most strongly affected if inactivity could be reduced.

Drinking fountains may help people exercise better and stay outside longer. Andrew L. Dannenburg, Howard Frumkin, and Richard J. Jackson, widely regarded as the authorities on the public health impacts of the built environment, have a section on "Community Design for Physical Activity" in their 2011 book *Making Healthy Places.* They write, "the quality and aesthetics of recreational facilities are important contributors to physical activity. Trails and parks that are well-maintained, clean, safe, and well-lit, and have facilities such as restrooms, drinking fountains, and exercise equipment are used more

---

106 Rudd Institute. "Sugary Drink FACTS: Advertising Spending."

107 Patel et al. "Increasing the Availability and Consumption of Drinking Water in Middle Schools: A Pilot Study." *Preventing Chronic Disease* 8, Number 3 (2011): A60–A60.

108 Lee et al, "Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy." *The Lancet* 380, Number 9838 (2012): 219–229.

and contribute to higher physical activity levels among users."[109] The authors spend a great deal of time in the book discussing the soft factors that encourage healthy behaviors; while there are some people who will exercise no matter what, and some people who never will, in the middle is a vast swath of the population with good intentions but without the right conditions to make it easier and more possible. A growing body of literature has established the impact that accessible and pleasant public spaces can have on physical activity levels, making necessary exercise easier and more enjoyable – and thus practiced by a greater percentage of the population.[110] Drinking fountains are a part of the landscape that creates more positive conditions to carry out exercise, and strategically locating fountains along running and walking trails could facilitate this exercise.

---

109 Andrew L. Dannenburg, Howard Frumkin, and Richard J. Jackson, *Making Healthy Places: Designing and Building for Health, Well-Being, and Sustainability* (Washington: Island Press, 2013), 42.

110 Andrew T. Kaczynski and Karla A. Henderson, "Environmental Correlates of Physical Activity: A Review of Evidence about Parks and Recreation." *Leisure Sciences* 29 (2007): 315–354.

Lithia Park drinking fountain, Ashland, OR.

Along the Charles River that divides Boston and Cambridge, there are popular trails on both sides. In nice weather, the trails are packed with walkers, runners, and bikers taking in the views and getting some exercise. In the past few years, and especially since coming to Cambridge and living about a mile from the river, I've started running about three times a week. As I run, I sweat and my mouth gets dry. Carrying water is a barrier and a burden, but I can usually reach drinking fountains by the time I need them. About two miles from my home is a drinking fountain at the Cambridge Rowing Club. It's just a pipe sticking out of the ground attached to a post, the barest minimum design, but it fulfills a vital function. Around a mile and a half, I start thinking about how tired I am, and about how far I'm getting from home (I'm always aware of that long run home!). But when I remember that drinking fountain, I realize that it's worth it to go a little further. That Rowing Club drinking fountain is singlehandedly responsible for me running more than three miles. And I started wondering if other people depend on the fountains as much as I do.

I decided to count the people using and not using the Charles River drinking fountains. Picking two fountains right along the trail and sitting between twenty to thirty feet away from them, I watched them for one hour, with five total trials. Each count was done in the afternoon, in mid-October and early May, with an average temperature of about

Cambridge Rowing Club fountain

Runner using the MIT Sailing Club fountain

71 degrees. (Based on anecdotal evidence and common sense, I speculate that drinking fountain counts under these conditions are probably significantly lower than they would be on a hotter summer day.) Keeping tallies of bikers, walkers, runners, walkers wearing workout clothes, dogs, and skateboarders, I observed a total of 1,053 people pass by. 433 of them were running, and of those, about seventeen percent stopped to use the drinking fountains, drinking for an average of about four seconds each. Of the 400 walkers, about five percent of them stopped for a drink, drinking for an average of about 3.5 seconds each.

This data is backed up by anecdotal evidence I've collected by talking with and emailing different runners. One friend told me in an email:

> "I absolutely rely on drinking fountains when I plan a run - especially if it is a longer one or hotter day. I usually run 4-5 miles; and once a week will throw in a longer run, anywhere from 6-10 miles. On those short runs, I use a drinking fountain twice, on the longer runs, I'll use one probably 3-4 times. Drinking fountains are critical to my runs and influence the routes I take. Basically I have two routes that I run because I know where I can get water on them. As a runner, I think water fountains are important because they can allow you to push yourself more and

Runners pause to drink from a single-bowl Benson Bubbler along the River in Portland.

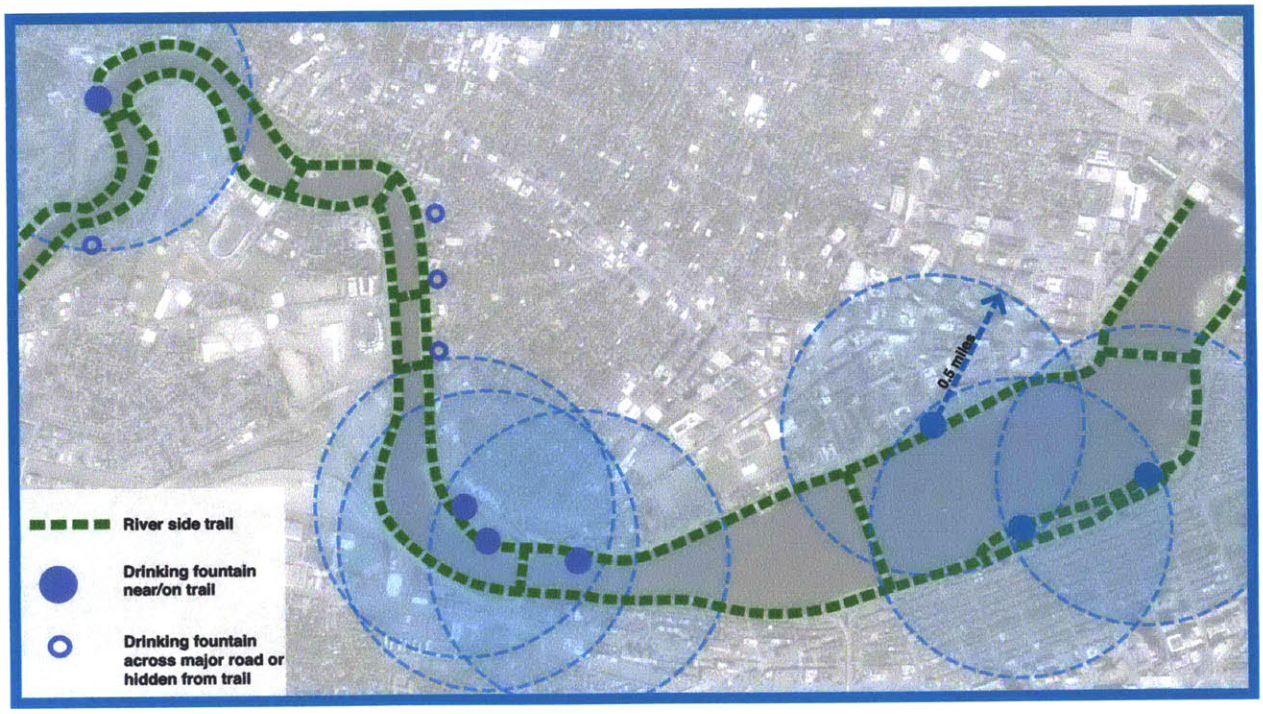
experiment with distances and keep you going."[111]

Several other runners have told me that they depend on drinking fountains, especially in the summer, and that they often plan their runs around them. One woman who had planned runs for a Syracuse running club told me that the club bases its running routes around available fountains. And many runners told me long stories about terrible hot runs when they couldn't find a fountain or when one that they had planned for was broken. One runner told me that she had to buy a water-carrying backpack because she found that she couldn't depend on finding water on runs, but she would have much preferred being able to easily take a sip from a fountain. Of course, runners have many of the same divides over drinking fountains as everyone else; one woman told me that she never uses them because of perceived germ presence. Another woman told me that she only uses them on more difficult runs because of the bad taste and temperature; she can usually rely on Austin's private running clubs that set up coolers with ice water along the river trails so runners can avoid the hot fountains.

Interestingly, as I counted drinking fountain users along the Charles, not one of the 159 bikers that passed by stopped at the fountains. This may have to do with total time of travel; bikes travel much faster than bikers or walkers, so although people may be vigorously exercising, they may need water at further mileage intervals than those going

111 Chloe Schaeffer, email message to author, March 8, 2015.

CHARLES RIVER TRAIL DRINKING FOUNTAIN ACCESS (MAY 1 - OCTOBER 31)



on foot. Further, dismounting and stopping the motion of the bike is a barrier. This suggests that the sweet spot for bikers' water is further apart.

One warm October day last year, a friend and I went on a thirty-mile bike ride in Western Massachusetts. We found the trail in a "Rails to Trails" guidebook; a former train track that had been converted into a beautiful trail, it was six feet wide and paved with asphalt. We took a couple of water bottles with us, with the expectation that there would be a place we could fill them somewhere along the trail. But over the ten miles plus an additional recommended five miles into town, we did not encounter a single drinking fountain. This trail is a popular, beautifully maintained trail, but there was nowhere to fill our bottles or get a sip of water. I wasn't the only one to notice this: an enterprising homeowner whose backyard abutted the trail had noticed, too. There, amid the trees, was a glowing Coke machine. The machine offered several different selections, but the entrepreneur seemed to believe that water was the most alluring: a wooden sign on the trail advertised, "Water / Cold Drinks / $1." The homeowner had apparently run an extension cord several hundred feet from their house to the trail and added a couple of plastic Adirondack chairs for good measure. Stepping in where the

An enterprising homeowner acknowledges the need for water on exercise trails.

public sector had failed to provide, this private sector actor had created a money-making trailside café. Unfortunately, instead of promoting the public good as a public-sector-installed drinking fountain and bench would have, the Coke machine sought profit at the expense of the people carrying out the very activity that should have been encouraged through amenities and lowered barriers.[112]

The recognition that water provision is helpful for many kinds of outdoor exercise helps to make the case for more public drinking fountains. If 15% of runners along the Charles River are currently using the poorly maintained, ad-hoc drinking fountain network, a well-designed, well-maintained drinking fountain network, strategically located to maximize passing exercisers, could benefit the public even more.

URBAN DESIGN

While things that we value tend to be well designed and enjoyable, the drinking fountain experience is usually purely utilitarian, if not unpleasant. But reimagining drinking fountains as objects and networks that should be thoughtfully designed could reposition them to accomplish urban design, placemaking, and system goals.

OBJECT DESIGN

Drinking fountains in the United States underwent a curious split between form and function. A fountain was traditionally a display of water, used afterwards for drinking or taking home. The same water was displayed and consumed. But Americans have often been skeptical of beautiful objects. The early monumental fountains were both ornamental and functional, but ever since the 1920s, almost all American drinking fountains have been supremely unornamental and undesigned.

Here, the linguistic split becomes particularly interesting. In the United States today, a "fountain" is ornamental, with non-potable water. To indicate that an object dispenses potable water, the modifier "drinking" or "water" is added to "fountain." And that changes the whole meaning. Commenting on the majority of existing drinking fountains, author Bernard Rudofsky writes that:

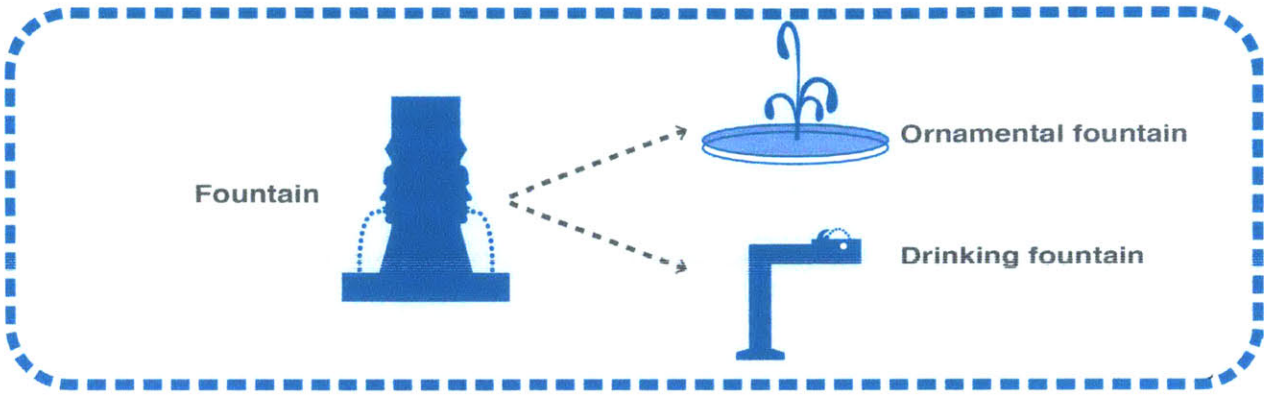
> "...styled as pithily as urinals, they belong indeed in the category of hygienic appliances rather than works of art. Calling them fountains is just another one of those endemic euphemisms... unlike America's fountains, those of the Old World are utilitarian as well as decorative. Their water, copiously consumed, is often renowned for its purity."[113]

---

112 The Coke machine was about halfway along the ten-mile trail: for bikers, water every five miles is probably a good estimate.

113 Bernard Rudofsky, *Streets for People: A Primer for Americans* (New York: Doubleday & Company, Inc., 1969), 285.

FORM/FUNCTION SPLIT



According to architect Jan Gehl, aesthetic considerations strongly impact functional considerations: "'practical' and 'esthetic' functions are inseparable....Theory must deal with the esthetic aspects of cities, even though it may be a more difficult part of its task. Indeed, it must deal with function and esthetics as one phenomenon."[114] In her article "The Poetics of City and Nature: Towards a New Aesthetic for Urban Design," Anne Whiston Spirn corroborates the idea that aethetics and urban function must be closely linked, layering meaning and intention in public space:

> "Today, few urban designers concern themselves with water and sewer systems. Yet the impact of these public works on the shape of urban form and aesthetic experience is too great to ignore. Neglect of such concerns, combined with a focus on form that is devoid of meaning or whose meaning is limited to an arcane discourse, not only forfeits a sense of connection, but also leads to the creation of a public realm that engenders a sense of alienation....
>
> "This aesthetic, as applied to the urban landscape, must provide satisfaction on multiple levels: on the level of the senses aroused, the functions served, the opportunities for "doing" provided, and the symbolic associations engendered. These multiple layers of meaning, when congruent, will resonate, combining complexity and coherence, amplifying the aesthetic experience of the city."[115]

If functioning at all, common drinking fountains today provide satisfaction on only one level: functional water delivery. Spirn's New Aesthetic calls for multiple levels of meaning and use in commonly un-considered infrastructure, only possible through thoughtful, careful design.

When standard, undesigned drinking fountains are installed in public

---

114 Kevin Lynch, Good City Form (Cambridge: *The MIT Press*, 1981), 104.

115 Anne Whiston Spirn, "The Poetics of City and Nature: Towards a New Aesthetic for Urban Design," *Landscape Journal* 7, Number 2 (1988): 108-126.

places, people can tell that no thought was given to the object, and likely, little care is given to it. Public space loses richness and texture, which is hard to articulate but easy to sense. In his book *The Art of Placemaking,* author Ronald Lee Fleming argues that urban design should focus on creating unique places, condemns the catalogue-standard approach to design, and calls out street furniture as a particularly fecund area for placemaking exploration:

> "We are also encouraged by street furniture that breaks away from that advertised in the catalogues that fall out of architectural magazines. Set down carelessly on American streetscapes, such generic models often condemn a site to an instant and dating banality. All of those Main Street projects begin to look the same because most civic programs did not deploy street furniture as a way of defining place. Exceptions include tree guards in Louisville that are shaped like the architectural order of adjacent buildings or the personalities of local characters; benches in Seattle that articulate elements of local history in boat landing sites around Lake Union; and benches outside the restored Santa Fe railroad terminal in San Diego that echo, in decorative tiles, the motif of the station. But there are still not enough options here, and the problem seems to be related to the retreat of the artisan to the fine arts gallery and the failure of the critics to notice the work that has been done."[116]

Portland's iconic Benson Bubblers are a symbol of the city, a fact recognized by Benson's heirs when they stipulated that the Bubblers be installed only within Portland proper. Allowing other places to install the same fountains would have weakened the uniqueness of the fountains to Portland. The Benson Bubblers create identity for the whole city, but single objects can also help structure character for a square or a neighborhood.

In late nineteenth-century Paris, Sir Richard Wallace donated drinking fountains as many of his contemporary philanthropists had done around the Western world. Paris's Wallace Fountains, of which 81 remain, are located at intersections and areas with high densities of pedestrians. Most of them are a tall form supported by four caryatids. They are painted dark green, and continue to provide water to thirsty Parisians (tourists usually do not notice them, or assume that the water is non-potable). They also seem to inspire new generations of drinking fountain artists: a contemporary fountain in the Saint-Michel neighborhood is in the shape of a woman in a dress, painted the same dark green with water coming out of her outstretched hand, in a modern take on the Wallace Fountain design.

A recent London drinking fountain design competition drew "high design" back into drinking fountain design, including an entry by Zaha Hadid

---

116 Ronald Lee Fleming, *The Art of Placemaking: Interpreting Community through Public Art and Urban Design* (London: Merrell, 2007), 22.

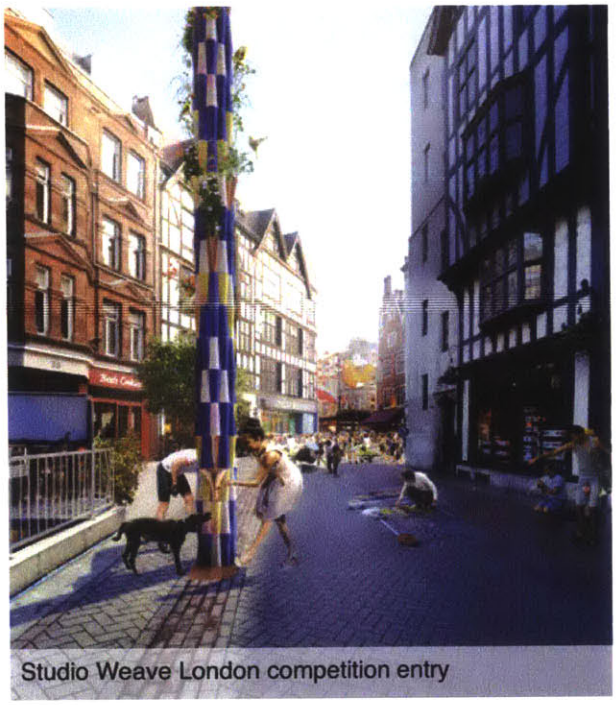
Wallace Fountain, Paris, France

Saint-Michel fountain, Paris, France

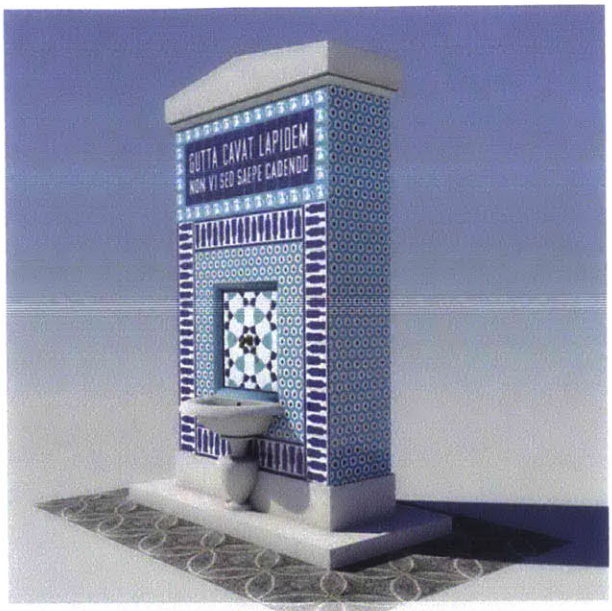
Architects. Sponsored by Architects' Journal and Turkish Ceramics, a group that promotes the Turkish tile industry, entries were required to be clad in tiles. While the competition addressed drinking fountains as singular objects, it sought to draw attention to the problem of bottled water, and to reinspire public water sources. Many of the designers sought to design fountains as urban gathering places, and they also acknowledged the importance of a water network. *Fast Company* quoted a designer from Studio Weave, one of the six finalists, as saying, "For an alternative to bottled water to work, people need to feel confident when they leave the house that they will be able to find water fountains. Fountains should be in clearly visible locations, at strategic junctions in the urban fabric."[117] Studio Weave's drinking fountain, a tall blue column, could act as an easily visible beacon throughout the city. As leading designers, they recognized the holistic need of design to consider design at all scales, from the interaction with the stream of water all the way to the overall city network. Instead of hiding drinking fountains in corners near bathrooms, like shameful pieces of neglected infrastructure, the six designs of the London competition celebrated their placemaking and urban design potential.

---

117 Adele Peters, "6 New Designs For Water Fountains, To Get You Off Bottled Water For Good," ***Fast Company,*** 2014.

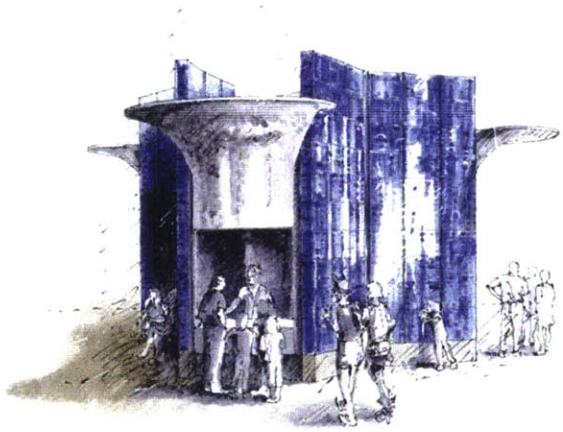


Studio Weave London competition entry



ADAM Architects London competition entry

AHMM London competition entry



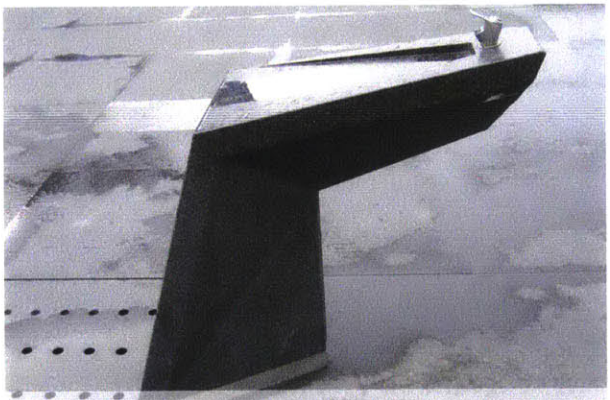
Eric Parry Architects London competition entry

Zaha Hadid Architects London competition entry

Hopkins Architects London competition entry

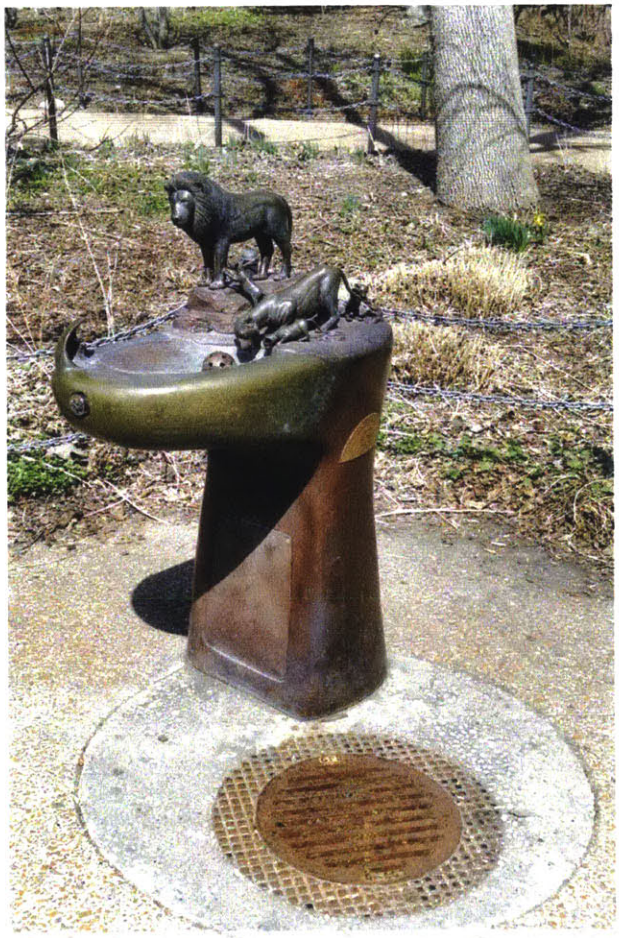
World-famous designers are not required to create beautiful drinking fountains, though. There are some wonderful examples of exquisite drinking fountains whose designers are unknown. One particularly beautiful fountain in Toronto is carved from a single piece of polished granite; run-off water flows down the diagonal into a graceful matching ground-level drain. Several zoos have lovely animal-themed fountains, including the Chicago Zoo's small bronze lion family that drinks out of the same fountain as you. And many of the best fountains were very inexpensive to construct: a beach-side park in Maui has a drinking fountain built from volcanic rock with orchid vines growing all over it; the drinking fountains in California's Muir Woods are simple redwood construction and drain into the understory planting; and a park in southern Oregon has a simple pile of granite stones with a drinking fountain carved into one.

Other cities have missed major opportunities in the restoration of old fountains. In Portland, Maine, two early 20th-century drinking fountains were reinstated in downtown locations, cleaned up and reconnected to water, but they are now treated as purely ornamental historic fountains; there was apparently no attention paid to their potential to serve their



Downtown fountain, Toronto, Canada

Beachside fountain, Maui, HI



Chicago Zoo lion fountain, Chicago, IL

original drinking function again. Responding to my inquiry about an historic fountain in Boothby Square, the Chair of the Portland Public Art Committee responded that, "the trough is not scrubbed or bleached, so I don't think anyone would want to drink from it."[118] The other fountain restored by the Portland Public Art Committee, "The Little Water Girl," has been placed in a decorative spot in the lobby of a library. While the Art Committee's website acknowledges the fountains' historic use as sources of clean drinking water, it makes no mention of current potability, on the assumption that decorative fountains are no longer for drinking from. Following Spirn's call for an urban aesthetic that is layered and multi-functional, these fountains could easily have been fit with buttons and potable water for a wonderful renewed water source.

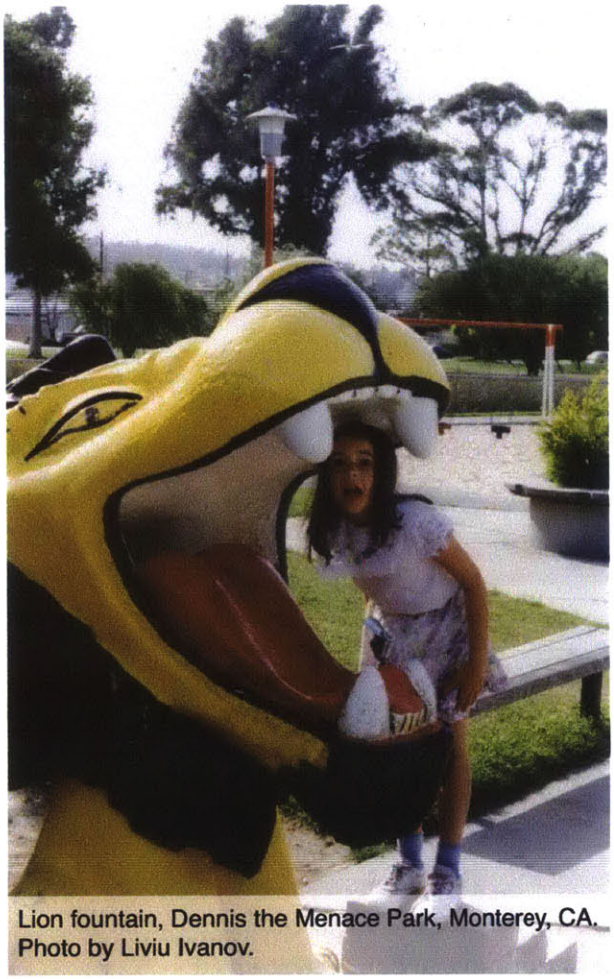
Whimsical fountains can also light up the landscape, adding playfulness to an otherwise ordinatry scene. Sacramento's Fairytale Town, a mini-theme park, has several delightful children's fountains, including a

118 Lin Lisberger, email message to author, 2015.

Muir Woods fountain, CA

Lithia Park fountain, Ashland, OR

Boothby Square fountain, Portland, ME



Lion fountain, Dennis the Menace Park, Monterey, CA. Photo by Liviu Ivanov.

Hippo head fountain, Fairytale Town, Sacramento, CA

Flower fountain, Fairytale Town, Sacramento, CA

flower, a hippo head, and a wishing well, all at toddler-height and made with minimal materials. Monterey's Dennis the Menace Park has a lion fountain with little stair step-stools so that kids can get their heads right into its mouth.

Simple applied materials can also transform a catalogue standard fountain into something special that enhances the landscape. Amsterdam's standard drinking fountain, a simple green column with a bowl and upright jet, is transformed at the entrance to Sarphartipark with blue mosaic tiles.

The possibilities for drinking fountain design are endless, but the simple act of remembering that drinking fountains are objects with design potential is a crucial first step.

A SYSTEM OF DRINKING FOUNTAINS

Beyond the design of the fountain objects themselves, designing the fountain network as a whole can positively impact urban spaces and cohesion. Kevin Lynch describes system design as "a set of

Standard city fountain, Amsterdam

Simple mosaic tile differentiates the standard city fountain. Sarphartipark fountain, Amsterdam

fundamentally connected objects, which may extend over large areas but do not make a complete environment (an arterial street system, a lighting system,)" [119] This definition clearly applies to drinking fountains and places them squarely in the urban designer's realm.

Public water has long roots as a driver of urban design. Seneca wrote that, "where a spring rises or a river flows, there ought we to build alters and offer sacrifices." Describing the necessary prerequisites for siting a future city, the first item on Lewis Mumford's list is, "the pure spring with its year-round supply of water."[120] The need for reliable water access has been constant in human history. Mumford continues: "The provision of public water was also a collective function of the town. First the guarding of a well or spring, in a suitable enclosure; then the provision of a fountain in the main public square, and of neighborhood springs and fountains, sometimes within the houseblock, sometimes in the public way."[121] The urban form of this pure spring has shifted over the centuries: stream, river, well, pump, fountain, faucet. The sacred

119 Kevin Lynch, "City Design and City Appearance," from *City Sense and City Design: Writings and Projects of Kevin Lynch*. Eds. Tridib Banerjee and Michael Southworth (Cambridge, MA: The MIT Press, 1990), 465.

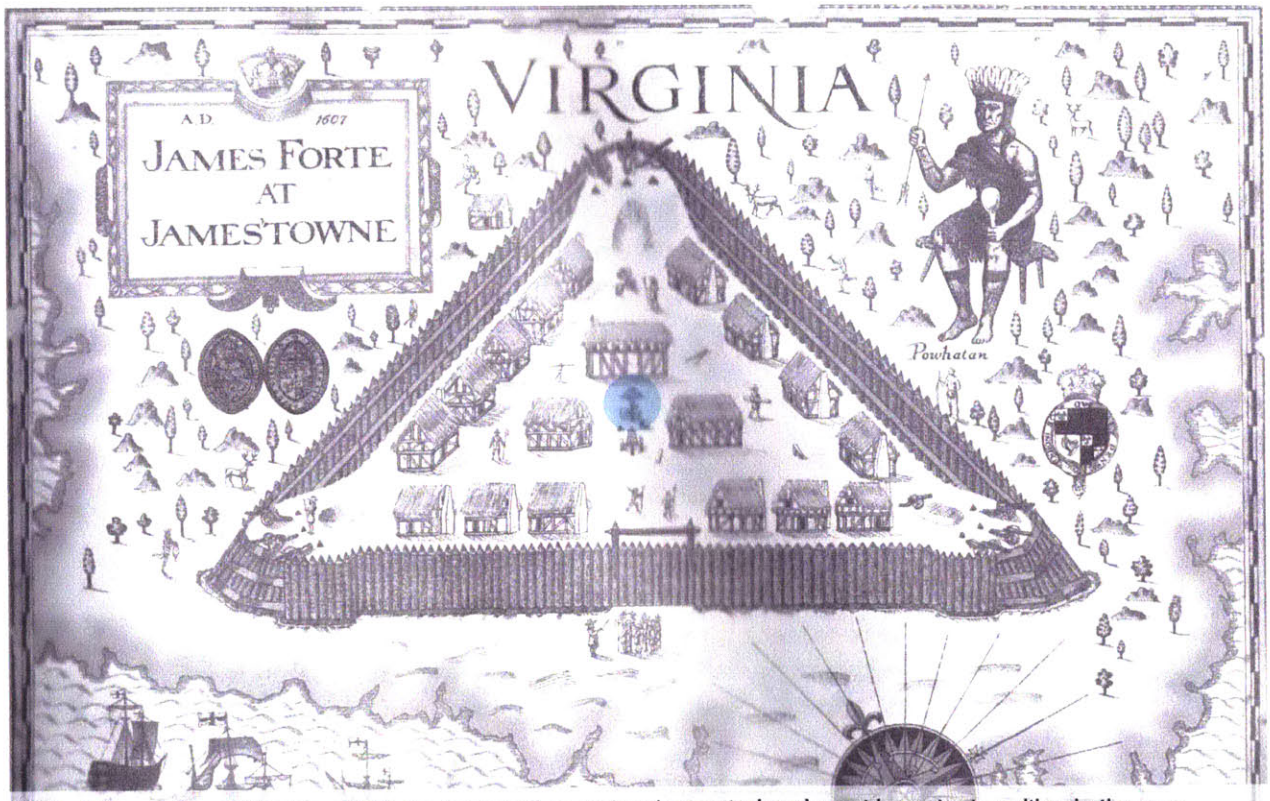
120 Lewis Mumford, *The City in History* (San Diego: Harcourt, Inc., 1961), 9.

121 Lewis Mumford, *The City in History* (San Diego: Harcourt, Inc., 1961), 294.

value of this water to humans has long been embedded within culture. The drinking fountain is the one piece of urban form where the precious water that flows easily into every home and every business in the country emerges into the public realm for drinking.

The role of the public water source as an important place in the community is well-established. According to Lewis Mumford,

> "the piping of water to public fountains whence it was distributed by hand to the houses, was not as convenient as the extension of a common system to all householders.... To make up for its inconvenience, the fountain satisfied two important functions that tended to disappear later with an increase in technological efficiency: the public fountain was often a work of art, gratifying to the eye as well as slaking the thirst, notably in the cities of Italy and Switzerland; and it was further a focus of sociability, providing an occasion for meeting and gossiping, since the fountain or pump, no less than the taproom of the tavern, served as the local newscaster for a quarter. Sanitarians and engineers today, seeking to spread their familiar mechanical benefits to backwards countries by laying on water in every house in otherwise primitive villages, often grievously disrupt the social life of a community



View of Jamestown, Virginia, 1607: the town well occupies the central and most important position in the new town. Image from *The making of urban America; a history of city planning in the United States.*

without offering sufficient compensation."[122]

This story is echoed in a book on Swiss fountains:

> "In the second quarter of this century, with the advent of piped water into houses, urban social life has dramatically changed. Gossipy servants no longer toted water from the fountain to the house. The streets somehow took on a different appearance. A part of community life was lost forever. True, craftsmen, farmers and fishermen still meet by the fountain. But the role of the city fountain is now largely ornamental rather than utilitarian."[123]

The modern proverbial office water cooler serves many of the same functions, but a drinking fountain currently does not.

Rome is probably the best example of the power of fountains through system design. Imperial Rome had hundreds of public fountains, but after Rome's fall, the aqueducts and fountains fed from them gradually fell into disrepair. During the Renaissance, some of the biggest public works involved restoring and improving the water system, which allowed the city to regrow. This system innovatively used water over and over. Entering the city, the aqueduct water would first go through a display fountain. Display fountains had subsequent drinking fountains – in the Moses fountain, a waterfall erupts under the statue of Moses, and the water then goes into four lion heads, which spit water into drinking arcs close to the edge and easily accessible. From the display fountain, the water breaks into lateral branches, some going for animal drinking troughs to washing troughs, and some continuing into pipes that broke into smaller street fountains and then to private pipes. Wealthy homeowners were encouraged to build public fountains as they were given the right to use the runoff water to irrigate their gardens after it ran through the public fountain. The water was clearly viewed as very valuable to the city, and each drop was carefully used as many times as possible.

These public water sources were financed by a mixture of government – Papal – money and wealthy donors. The important point for their funding was that the fountains were both functional humanitarian objects and works of art. The Moses Fountain glorified the Pope at the same time it gave a drink of water. Other beautiful fountains built by wealthy citizens showed off their goodness and wealth simultaneously, contributing to social capital and personal glory, subtly encouraged by supporting lavish gardens at the same time. As Rome became a tourist-friendly city, public water became an imperative. Some fountains, such as the Quattro Fontane, were particularly targeted at Rome's thousands of religious pilgrims, and demonstrated the beneficence of the Church for

---

122 Lewis Mumford, *The City in History* (San Diego: Harcourt, Inc., 1961), 295.

123 Pierre Bouffard and Rene Creux, *Fountains: Mirrors of Switzerland* (Paudex: Bonveent & Fontainemore, 1973), 10.

those that had come to marvel at its splendors.[124]

The most critical part of the story of the Roman fountains is their network character. This was not a chance fountain here and there; instead, it became a network of hospitable markers that both gave the city its character and helped it function. In Rome's hot climate, fountains made squares hospitable, and the presence of abundant, cold drinking water in every corner of the city made it possible for tourists to see what they had come to see.

Today, the tourism industry is worth billions to international economies. 69.8 million international tourists visited the United States in 2013, spending $139 billion.[125] This doesn't represent the whole picture of the importance of tourism in the United States, as regional tourism is actually much larger. The UN World Tourism Organization predicts that worldwide tourism will continue to grow by about 3.3% per year to 2030.[126] As cities compete for these tourist dollars and plan tourist

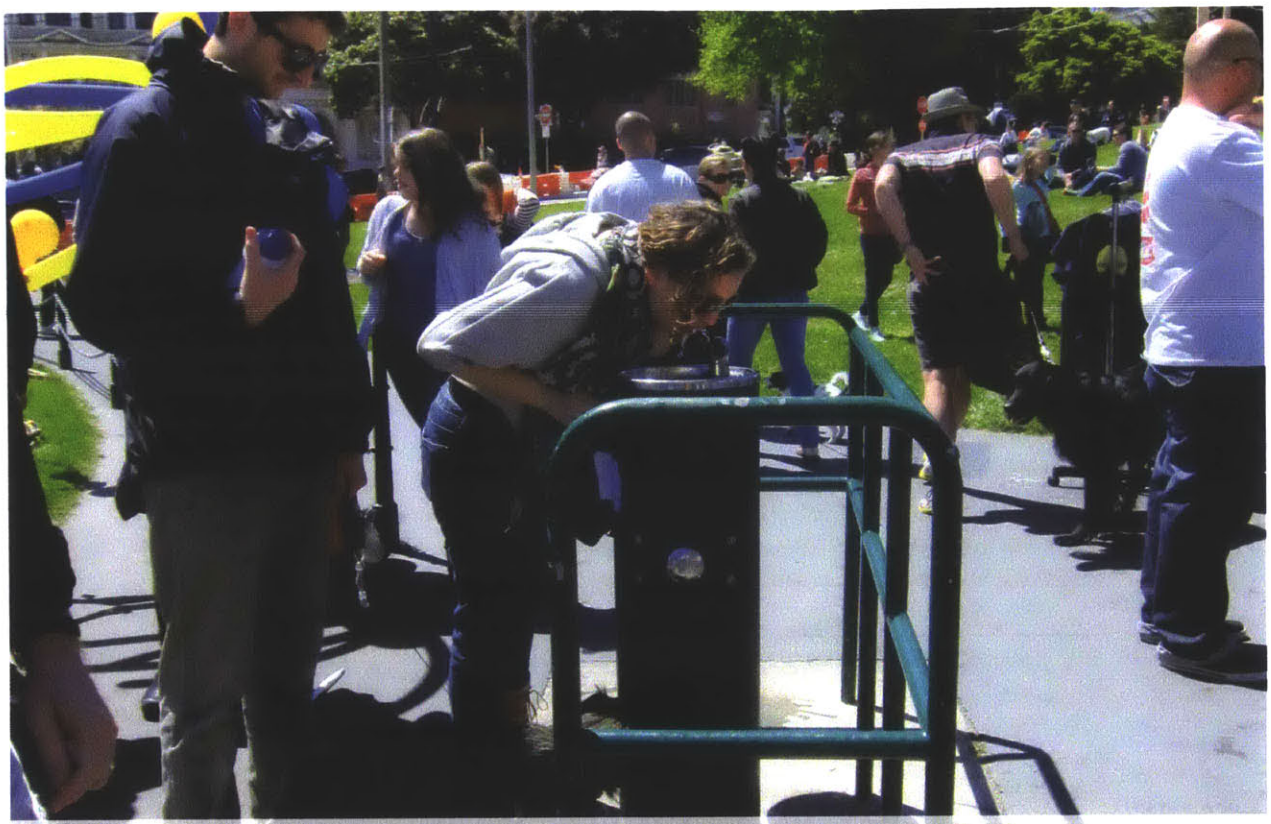
---

124 Rinne, Katherine W. *The Waters of Rome: Aqueducts, Fountains, and the Birth of the Baroque City* (New Haven: Yale University Press, 2010).

125 "UNWTO Tourism Highlights: 2014 Edition," United Nations World Tourism Organization website, 2014, accessed March 25, 2015.

126 **"UNWTO Tourism Highlights: 2014 Edition." United Nations World Tourism Organization website, 2014, accessed March 25, 2015.**

Roman diagram showing system of water pipes and outdoor fountains in ochre. Image from *The Fountains of Rome.*



Festival revelers wait in line for a drinking fountain. Duboce Park fountain, San Francisco, CA

friendly infrastructure, the physical fabric of the places becomes very important, including drinking water access. Residents and office workers have near-constant water access inside homes and offices, with their outdoor activities representing a fairly small proportion of the day: at the drinking fountain outside of the California State Capitol building, several people told me that if they were thirsty, they would just go inside to drink water in their office. But tourists typically spend the day out and about, trudging from one important site to another. In San Francisco, New York, Philadelphia, or Boston, it's very common to see busloads of hot dusty tourists, mostly travelling in summer months. These tourists are prime candidates for buying wasteful single-serving bottled water when they start to feel hotter than they expected and don't know when they will find water again. But consciously installing appealing drinking fountains near all popular tourist destinations, and along the paths in between (such as Boston's famous Freedom Trail), could create a more pleasant and eco-friendly tourist experience. When asked about drinking fountains, many Americans start spontaneously raving about enjoying using drinking fountains when traveling in Rome. Why couldn't American cities be known for the same compassionate accommodation?

Well-designed fountain networks can make the city more imagable and attractive to tourists as a destination, too. As Kevin Lynch's book *The Image of the City* describes, landmarks and nodes help people navigate urban spaces and create opportunities for wayfinding and

stronger mental maps.[127] Currently, in most of the United States, only ornamental fountains fill these functions. But drinking fountains, especially iconic drinking fountains of a consistent type and form, could strengthen nodes or create small landmarks. City drinking fountains could become a recognizable attraction, as Portland's have, and with the explosion of digital photography, interesting urban elements become globally important. Google's photo detection technology, taught to recognize tourist landmarks through machine learning, does not currently recognize drinking fountains, making it impossible to map their locations through crowd-sourced photos. But more iconic drinking fountains, created as a tourist draw and amenity in popular locations, could conceivably begin to be recognized by the world's leading navigation technology, making the city more imagable both in real and virtual life. Further, drinking fountains can physically connect people to place through more that just visual impact. Phenomenologically, a drinking fountain can tap into touch and taste, literally putting an urban element inside a visitor and creating a much stronger connection than a visual one alone. (The sense of smell, though, should be avoided!)

Arguably even more important than attracting tourists is the recent rise of "livable city" metrics, as, in the wake of Richard Florida's work on the so-called "Creative Class," metropolitan regions try to attract young, educated residents. Rankings such as ParkScore, WalkScore, and the Livable City Index grade cities across the country on everything from access to green space to dog-friendly restaurants. As has been extensively documented, the millennial generation tends to prefer cities with good public spaces, recreational activities, and lively downtowns, reversing the suburbanizing and privatizing trends of their parents and grandparents.[128]

As architect Jan Gehl has extensively written, high quality amenities and pleasant public space can directly impact the liveliness of city space. In his book *Cities for People,* he writes that, "The potential for a lively city is strengthened when more people are invited to walk, bike, and stay in city space."[129] As documented in the section on exercise, drinking fountains can be vital elements in facilitating walking and biking, pulling people out of bleak gyms and out onto the streets. Everyone can stay outside longer when more needs are met, especially children and the elderly whose needs may be more pressing. And as Gehl writes, "lengthy stays mean lively cities," documenting that the more people are enticed to stay outdoors and linger, the more active public space will be.[130] "When outdoor areas are of poor quality, only

---

127 Kevin Lynch, *The Image of the City* (Cambridge: MIT Press, 1960).

128 Richard Florida, "The power of place : the creative class," in *American urban politics in a global age : the reader*, edited by Paul Kantor and Dennis R. Judd. (New York, N.Y.: Pearson Longman, 2008), 20-40.

129 Jan Gehl, *Cities for People* (Washington: Island Press, 2010, 7.

130 Jan Gehl, *Cities for People* (Washington: Island Press, 2010), 72.

strictly necessary activities occur.... People hurry home. In a good environment, a completely different, broad spectrum of human activities is possible."[131] Today, most American cities are trying to recapture that broad spectrum of human activities in public space moving beyong the shallow "live, work, play" slogans of the early 2000's. Urban amenities such as drinking fountains can help.

The architecture and urban design firm Pilot Projects, under founder Scott Francisco, attempted to put on an international drinking fountain design competition for New York City. Using environmental and urban design justifications, they proposed installing one hundred new drinking fountains around the city for one summer in a high design drinking fountain festival. At the end of that time, the fountains would be auctioned off to pay for the permanent installation of one winning fountain design in all one hundred locations.

With the idea that drinking fountains have become a disrespected and ignored urban element, the group asserted that international design would be just the thing to alert New Yorkers, and the millions who visit New York every year, about the high quality of the city's drinking water, all while bringing attention to the city's commitment to reducing plastic pollution, tapping into and improving existing street life, and further establishing New York's position as a center of great art and culture. To raise awareness for their project, Pilot Projects put on two events called "Respect the Fountain," one at the Washington Square Park drinking fountain and one at the Union Square drinking fountain. With a red carpet, a tuxedo-clad waiter to push the button, and live string instrumentation, they filmed the events as pop-up performances.[132] The group argued that emotional-level decision making is much stronger than cerebral decision making in drinking fountain use choices. Giving fountains an aura of celebrity and excitement could raise people's usage probabilities in a way that a more rational argument about environmental good could. This argument was at the crux of the competition proposal, which would have arguably made a big impact in how New Yorkers view and feel about using drinking fountains.

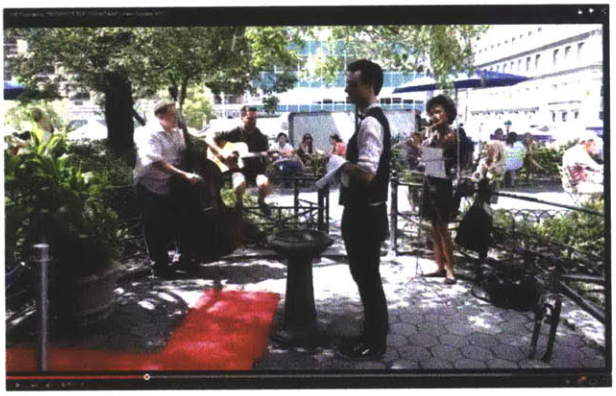
But in 2012, when Pilot Project was pitching the proposal, they were not able to secure approval from the city. According to Francisco, while several members of the city government, notably including Gail Brewer, then City Council member and now Manhattan borough president, found the project compelling and important, Pilot Projects ultimately ran up against the same limitation as drinking fountain expansion projects in Portland and Minneapolis: city agencies' refusal to take on

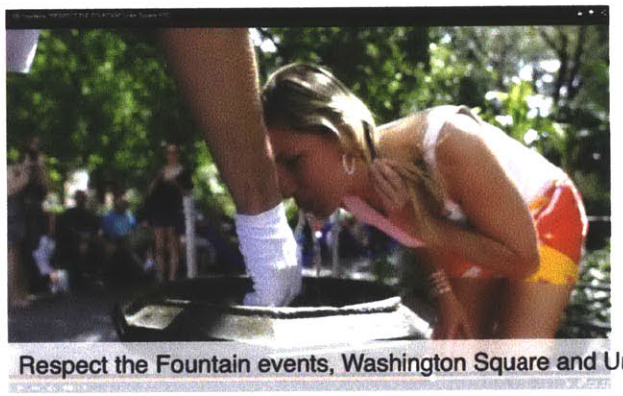
---

131 Jan Gehl, *Life Between Buildings: Using Public Space* (Copenhagen: The Danish Architectural Press, 2010. Translated by Jo Koch), 11.

132 "100 Fountains: "RESPECT THE FOUNTAIN" Union Square NYC," and "100 Fountains: "RESPECT THE FOUNTAIN" Washington Square NYC," Pilot Projects, Youtube, 2012. https://www.youtube.com/watch?v=Aa85nvBtmq8, https://www.youtube.com/watch?v=ZFq8z96zbQQ. Accessed March 26, 2015.




Respect the Fountain events, Washington Square and Union Square, New York City. Images from Youtube.

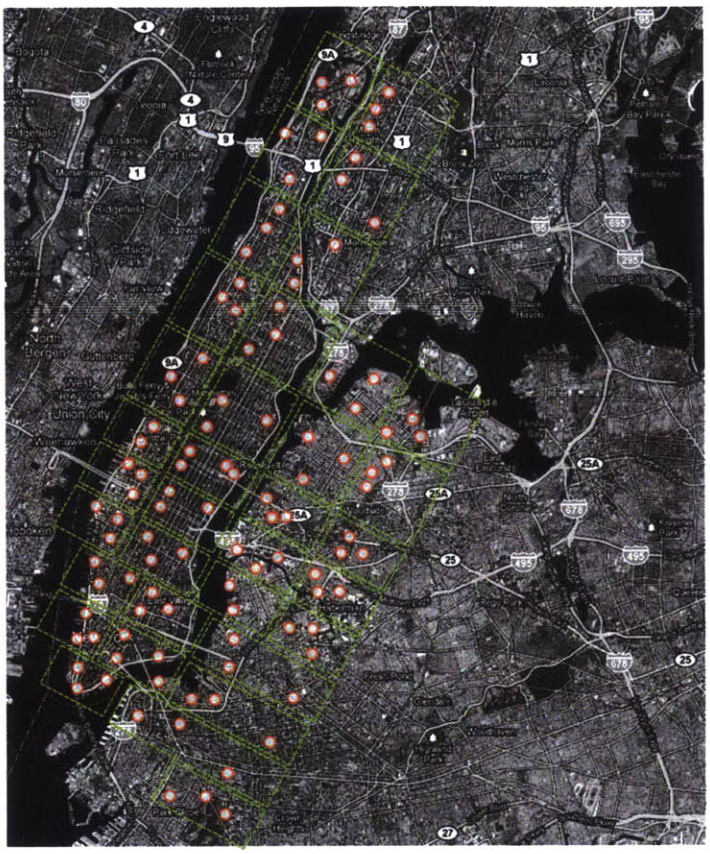
more maintenance projects. All of the drinking fountains in New York City are currently located in public parks, and maintained by the parks department. 100 Fountains proposed urban streetscape fountains, located along major thoroughfares and especially focused in the new plazas that the city has been reclaiming out of underutilized roadways. According to the NYC Department of Transportation's (DOT's) website,

> DOT works with selected not-for-profit organizations to create neighborhood plazas throughout the City to transform underused streets into vibrant, social public spaces. The NYC Plaza Program is a key part of the City's effort to ensure that all New Yorkers live within a 10-minute walk of quality open space.[133]

Drinking fountains would positively contribute to the quality of these open spaces, especially drinking fountains that double as public art and create a coherent network. But the Department of Transportation was unwilling to accept responsibility for maintaining drinking fountains. According to Francisco, their project budget proposal included a full maintenance budget for the Department of Transportation, to be paid for by the project sponsors. But the agency and the city just "fundamentally do not want more drinking fountains. Even if we pay for them, they still don't want them."[134] Short-sightedly, New York has so far refused this incredible opportunity at system design of a drinking fountain network. Francisco holds out hope that city officials will re-evaluate the need and change their minds. How that can and should happen will be explored in the next section.

133 "NYC Plaza Program." NYC Department of Transportation website, accessed March 26, 2015. http://www.nyc.gov/html/dot/html/pedestrians/nyc-plaza-program.shtml

134 Scott Francisco, telephone conversation with the author, March 25, 2015.

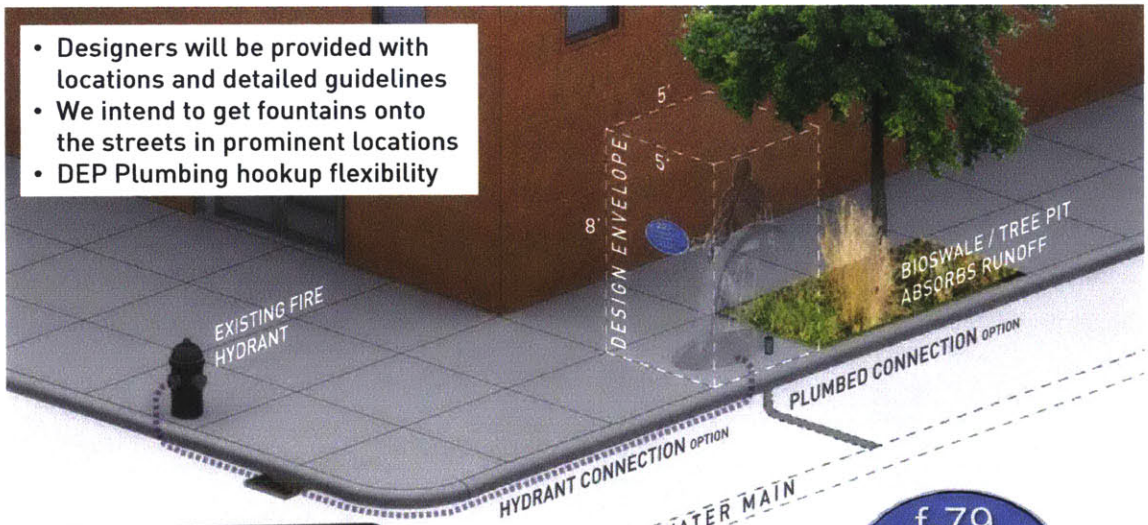


100 Fountains competition connects global artists to the future of water in NYC and beyond.

100 New Drinking Fountain Designs
- 33 Zones, across all 5 boroughs
- 3 fountains in each zone (+1)
- Locations vetted by neighborhood leaders and NYC officials

100 FOUNTAINS | PILOTPROJECTS

- Designers will be provided with locations and detailed guidelines
- We intend to get fountains onto the streets in prominent locations
- DEP Plumbing hookup flexibility



100 FOUNTAINS – *MAP APP*
- Routes and Locations
- Artist bios
- Sponsor info

100 FOUNTAINS - *ID PLAQUE*
- RFID tags
- Artist names
- Sponsors

Pages from Pilot Projects' "100 Fountains" proposal.

RECOMMENDATIONS

Drinking fountains have declined in America as part of a larger trajectory of infrastructural disinvestment, distrust in public works, privatization of goods, and poor design of public space. But better design and more public investment could create a positive future for free public water that would directly improve the health of the nation and the environment, the civility of our cities, and the overall standard of living for every citizen.

AN IMAGINED FUTURE

As I step out of the subway station into a busy urban plaza, I catch sight of a beautiful drinking fountain anchoring the public space. The fountain, a multi-level, many-spigoted mosaicked sculpture, is surrounded by people. An older woman bends to take a drink from one of the three central spigots, all at different levels. A few feet away, a boy fills a metal water bottle at a tall spigot; when the bottle is full, he uses one hand to splash the stream on to his face for some relief from the day's heat. Two little girls play in the small decorative jet at the far end of the fountain – that water curls around a bend into a dog bowl, where a big white poodle laps it up. Its owner perches on one of the fountains' built-in benches, reading and evidently waiting for someone, as the girls begin to splash the dog. The fountain wraps loosely around a large planter; the runoff from the fountains goes directly into the soil, irrigating the huge tree and obviating the need for any supplemental irrigation.

Smiling, I walk the half-mile from the subway station to my office; along the way, I pass another drinking fountain in one of the city's new street-side parklets. The small, single bubbler fountain looks like it was purchased from a catalogue, but is covered in the same style of mosaic tiles as the main fountain in the plaza. A group of tourists have clustered around the parklet fountain, taking pictures of their friends drinking the water and hanging out in the little public space. These fountains have sprung up all through the city – elaborate ones in main plazas and nodes, and standard catalogue fountains on the paths in-between, most decorated by local artists or community groups. Most of them have bottle fillers and dog bowls, too, and the manufacturers have begun experimenting with different forms: taller spigots, different hygiene guards, sleeker or more ornate designs. The artists and community groups have added their own marks to the fountains: some are fully encased in cast-iron sculpture, some have "Bottles Saved" counters, some include simple signage about the health benefits of water, and one even dispenses carbonated water from one of its spigots. Most of the fountains were donated to the city: like an Adopt-

a-Highway program, community groups and corporations have their logos on plaques on the fountains in exchange for the purchase price of the fountain and a yearly donation which covers the expense of the Parks Department's fountain maintenance. Four full-time employees maintain the city's network – an expert plumber deals with repairs, and three maintenance workers give each of the drinking fountains a good scrub-down every week, removing any incidental gum, slobber, or leaves. Fountain maintenance is visible and regular, and combined with innovative design and lovely form, has led to widespread use of and love for the city's urban fountain network.

When I travel to other cities, they have their own take on urban drinking fountains. In the hot cities of the South, most public drinking fountains are attached to private buildings so as to be refrigerated through the building's electricity, recognizing the importance of temperature in water appeal. Some of these wall-mounted fountains sit in the center of gorgeous murals, some in little building alcoves. In colder cities, new drinking fountains are frost-proof – they don't allow water up into the fountain until you press the button, preventing the pipes from freezing so they can stay on all winter. Outdoorsy cities with urban trails publish maps showing fountain network connections from trail to trail, but these are almost outdated now; Google Maps has a filter to turn on drinking fountain locations, and a quick search yields hundreds of little blue dots around you on a map. Now, you can almost always find fresh, free public water when you're thirsty. Just as how, despite initial maintenance and logistical hurdles, the idea of city bike-share recently took off around the country, drinking fountains have now been recognized as a feature that can add value, improve health, and be a positive asset for cities around the United States. Bottled water sales have dropped, water consumption has increased, health has improved, and the designed objects add life and joy to urban landscapes.

How did we get here? Or, how *could* we get here? Re-imagining drinking fountains for the 21st century requires a new take on object design, a systematic approach to network connectivity, and reexamination of municipal and private responsibility.

RECOMMENDED OBJECT DESIGN

Not every drinking fountain needs to be a beautiful and unique piece of public art, but not every drinking fountain should be utilitarian and undesigned, either. Along the spectrum of design and expense, designers should consider the appropriateness of siting, context, and potential benefit in deciding on drinking fountain form – a far cry from the current practice of just selecting one of sixteen colors from a catalogue and sticking it near the bathroom. As we have learned, poorly designed

and badly placed drinking fountains, while better than nothing, do not live up to their full potential.

Aesthetics, siting, spout design, mouthfeel, access, drainage, and maintenance should all be considered by designers, and all contribute to use potential and perception by passers-by. For example, outdoor ornamental fountains usually stand alone in prominent landscape locations. They display their sparkling water and are located nowhere near the mundane and disgusting restrooms and garbage cans. Ornamental fountains are sometimes surrounded by benches, which have a much cleaner and more pleasant association. In her paper "Messy Ecosystems, Orderly Frames," Joan Iverson Nassauer finds that landscapes that would often be perceived as uncared-for can be given an "orderly frame," an element of visible maintenance. Perceiving "cues to care," viewers understand the "messy landscape" as purposeful and cared-for.[135] Applying this framework to drinking fountains suggests the power of visual cues as people make decisions about whether or not to use a fountain. Drinking fountains with nice surroundings, perceived as separate from restroom water sources (even if they do share the same water source, the power of twenty feet of underground water connection is worth the extra money), and well designed and maintained display cues to care. As users' likelihood to drink from a drinking fountain increases at a statistically significant level with increased design ratings and with a belief that water is clean and safe, these visual cues to care appear to be quite powerful.

Simple signage and education can be effective, too. According to Patel, et al., "Testing drinking water in schools for contaminants and communicating water quality testing results to students, parents, teachers, and other school staff may help to counter student concerns regarding the safety of water from fountains."[136] To compete with the billions of dollars spent to market bottled water and sugary beverages, a minimum of design, signage, and high maintenance standards should be included in every drinking fountain.

There are also opportunities for using unexpected water types to bring interest and different users. Ashland, Oregon is a small town known for its naturally-occuring "lithia water" springs; the water is slightly carbonated and contains high levels of lithium, the mineral used in many anti-depressant drugs. Early plans to turn the town into an exclusive health resort failed, but today, residents and visitors can sip the lithia water from two fountains, one in the central downtown plaza and one in the park. Downtown, an informational sign tells about the water, and

---

135 Nassauer, Joan Iverson. "Messy Ecosystems, Orderly Frames," *Landscape Journal* 14, number 2 (1995): 161-170.

136 Patel et al. "Middle School Student Attitudes About School Drinking Fountains and Water Intake."

in both locations, there is an adjacent drinking fountain dispensing regular water - first time sippers often need a chaser after trying the very strong and somewhat sulphuric water. In attempts to cut down on disposable bottle waste, Paris and some Italian cities now have several new bottle fillers that dispense carbonated water, and Brussels and Perth, Australia, have similar fountains planned. The kiosks hold carbon dioxide cannisters, which pump bubbles into chilled water just before it is dispensed.[137] Unfortunately, they have been designed as bottle fillers only, necessitating having your own bottle or buying a three euro reusable bottle from a nearby vending machine. Building in a simple drinking arc would obviate the need for an accessory vending machine, but the general idea of different water types that may be more appealing or exciting to different users is intruiging.

In terms of pure object design, for large landscape architecture or urban design projects, it is very common to hire a fountain consultant to carry out the landscape architect's conceptual fountain design. But these are always consultants for ornamental fountains. Why couldn't landscape architects use these same fountain consultants to help create beautiful custom drinking fountains? On smaller scale, local governments and

137 Kristin Hohenadel, "The Rise of the Sparkling Water Fountain," ***Slate***, September 11, 2013.

Ashland, Oregon's downtown Lithia fountain celebrates the area's naturally occuring mineral water.

groups like the Trust for Public Land design and build small urban parks. These spaces frequently feature artist-designed benches or schoolchild-painted murals. There is no reason that the same surface reinterpretation couldn't be applied to catalogue standard drinking fountains, decorated and embedded within sculpture and art.

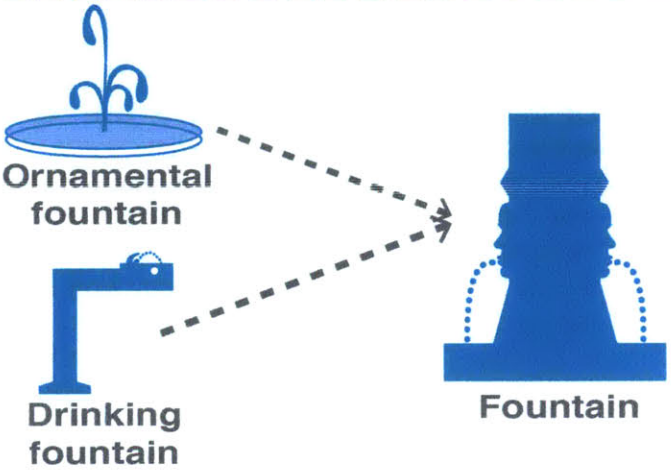
On the manufacturer's side, they have been coasting on the designs developed almost one hundred years ago. Innovation-free and apparently lacking the demand to change, today's fountains malfunction often and require dozens of parts. How could fountain design be streamlined to require fewer parts and less breakable hardware? Does the current bubbler technology really work so perfectly that it should stay the same? Anyone who has used one of the spraying fountains in most of the country's parks knows that there is a huge potential for redesign. Try making the spigots taller and at less of an upward angle – perhaps that would keep back-spray away from the fountain nozzle, increasing consumer confidence. Does the hygiene guard really work? Most people would say no. How could it be re-developed to actually keep mouths away from the spigot? In a famous episode of the television show *Parks and Recreation,* the parks department debates how to make a drinking fountain that no one would be able to put their mouth on: residents of the town are apparently infamous for drinking by wrapping their entire mouths over the spout. The employees are only able to keep their tester's mouth off the fountain by removing the spigot altogether. Perhaps there are designers and engineers with more creativity than a fictional television staff who could develop new designs to test. And maybe someday, standard drinking fountain catalogues will offer more choices than just concrete-aggregate and sixteen powder-coated steel colors. Where is the Steve Jobs of drinking fountains? Who will bring high design into the reach of modest city budgets?

The following pages contain recommendations on specific design considerations for new drinking fountains.

AESTHETICS

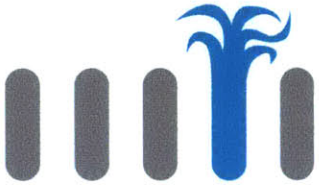
Re-marry form and function

Reunite the ornamental and the utilitarian fountain in public space.



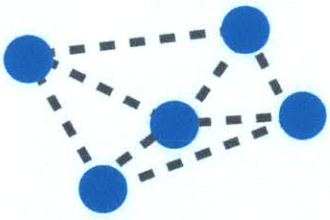
Beauty

People are more likely to drink from well-designed fountains. Beautiful drinking fountains add art and life to public places while serving an important function.



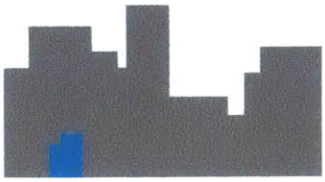
Uniqueness

Standard cataloge fountains have run their course. Custom or decorated fountains add value and interest.



Network coherence

The same drinking fountain design throughout a project or city can build a place's identity and give thirsty walkers a distinctive object to watch for in the landscape.



Sense of place

One size does not fit all in drinking fountain design. Reflect climatic, cultural, and urban design conditions at every level of the built environment.

MOUTHFEEL

Temperature

Cooler water tastes better. Users often let water run for several seconds before drinking, but planning for shading could help. Frost-proof fountains could also be used in hot climates, as they summon water from underground instead of leaving it in the pipes, resulting in cooler water. Indoor fountains should be refrigerated.

Taste

Lingering smells and mold adversely affect water taste. Good maintenance and cold temperatures are probably the best ways to improve taste.

Flow

Many drinking fountains restrict flows to small streams in an attempt to save water, but it is likely that users just need to drink longer to compensate. Generous flow is more pleasant, more satisfying, and less likely to dribble.

ERGONOMICS

Material texture

Consider the feel of the object. In hot climates, powder-coated steel can be too hot to the touch, and concrete-aggregate is rough and harsh. Materials like stone and bronze are more pleasant.

Pedals

While ADA-compliant fountains must have a button, pedals can augment other on/off devices, allowing fountain use while holding back hair and with one hand full.

Buttons/Handles

On/off buttons should be pleasant to the touch and not require too much pressure to activate. Handles can be more enjoyable to operate but may be more prone to vandalism.

SPOUT

Downward Spigot

Bottle-filler or jug-filler fixtures should only be used in tandem with drinking arcs, but providing them can broaden user bases and provide a water source that mouths are unlikely to ever touch.

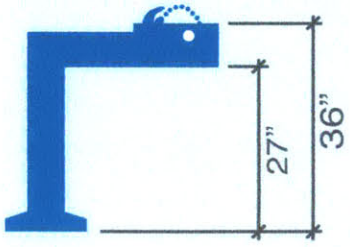
Raised arc bubbler

Raised bubblers with longer downward arcs could let drinking fountains double as bottle fillers without additional spouts.

New hygiene guard types

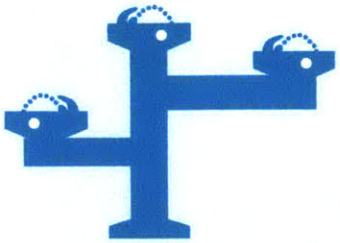
Designers should experiment with new types of hygiene guards that prohibit mouth contact.

ACCESS



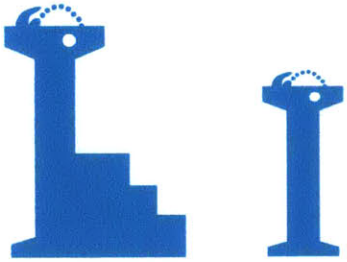
Americans with Disabilities Act accessible

At least one of a cluster of drinking fountains must comply with ADA regulations: knee clearance of at least 27" and a spout no highter than 36".



Varied height access

Accommodate people of different heights and bending abilities.



Child accessible

Drinking fountains commonly placed in children's playgrounds, always a normal industry standard, are too tall for small children to reach by themselves. Very small drinking fountains, or fountains with step stools, can make drinking fountains accessible to children under age five, reducing the need for parents to quench thirst by either holding children up for a drink or by pulling out a juice-box. Drinking fountains can also double as sites of water play and water sources for sand play. Side jug fillers can accommodate children's buckets and become refreshing and delightful sites of enjoyment for small children.

Bottle accessible

Fountains should easily accommodate a bottle without requiring sharp angles and water loss.

Dog accessible

Providing ground-level dog bowls prevents people from letting their dogs jump up to use the human spout, a major source of disgust for many potential users.

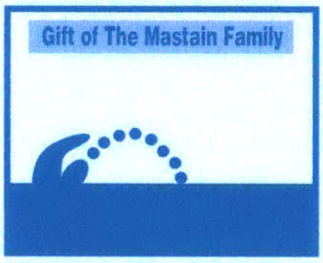
Wildlife accessible

While standing water can attract mosquitoes, drinking fountains are sometimes the only source of water for urban wildlife. Consider creative ways to let birds and small animals drink, too.

SIGNAGE

Information

Well-designed signage about the health or environmental benefits of drinking water, especially coupled with data about municipal water standards and purity, may increase use and trust.



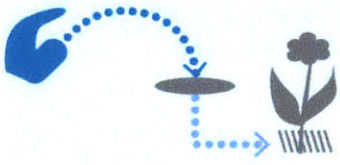
Sponsorship

Private sponsorship at either individual or corporate levels may help defray costs of drinking fountain installation and upkeep for cities. Well-designed signage or plaques with the sponsor's name or logo may increase interest in participation and help recruit new partners.

Bottles saved count

Showing how many disposable bottles were avoided, while not technically very accurate, can increase positive feelings of benefitting the environment.

DRAINAGE

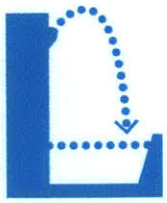


To greywater uses

Makes use of excess water by directing runoff into greywater pipes instead of sewers. Requires additional plumbing infrastructure - may be infeasible and expensive where no other greywater infrastructure exists.

To planter/soak pit

Use excess water to irrigate adjacent planting or let water soak into the ground. Saves costs on sewer hook-ups and reduces burdens on sewer systems. May require changing municipal codes to allow water to stay on-site.



To dog bowl

Allow run-off water to fill ground-level dog bowls. May require changing municipal codes to allow water to stay on-site.

OTHER WATER USES

Cooling

Heavier fountain streams and more open designs are more conducive to splashing water onto arms and faces for cooling on a hot day. May be especially beneficial for athletes and the elderly.

Play

Children's fascination with running water is almost limitless. Designing drinking fountains to be splashable, touchable, and playable strengthens children's links to public space and creates interesting activity for everyone to watch.

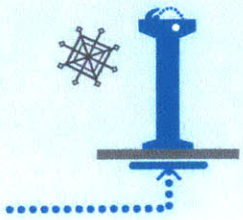
Cleaning/washing

In locations with present homeless populations, fountains with side spigots could allow people to wash hands or faces and discourage use of drinking arcs for these purposes. Shower attachments could be considered in some locations. Hand-washing capabilities may also be desirable in children's playgrounds.

CLIMATE

Shading

In hot climates, drinking fountains should be in shaded locations to prevent hot fixtures and water. Overhangs or pavilions may be better than trees, which drop leaves and can clog fountains and contribute to uncared-for appearance.



Frost-Proof

In cold climates, drinking fountains should be designed with frost-proof technology, to increase their year-round usefulness.

MAINTENANCE

Cleanliness

Drinking fountains should be cleaned with a clean cloth and disinfectant at least every two weeks. Gum, dirt, and miscellaneous build-up should be removed, and graffitti should be covered with matching paint or materials.

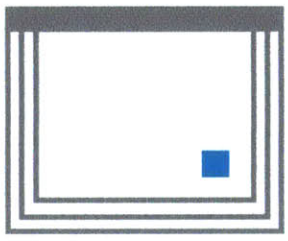
Repair

Drinking fountain repair should be prompt and effective. Mechanisms to allow citizens to report problems, coupled with prompt response, can help facilitate consumer confidence and keep drinking fountain investments worthwhile.

RECOMMENDED SYSTEM DESIGN

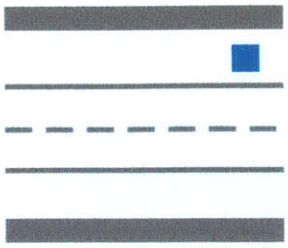
Drinking fountains are rarely thought of in terms of network. They are conceived of one at a time as individual objects. Even the Minneapolis drinking fountain proposition conceived of ten distinct objects, and while they originally tried to place the objects strategically, there doesn't seem to have been an effort to create a dependable *network*. Thinking of the overall system design of public water availability, designers can focus on certain areas to augment existing park-based drinking fountains:

SITING



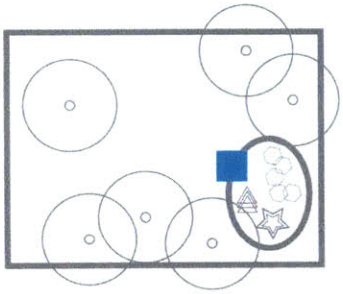
Urban public space

Providing drinking fountains in places where people gather, sit in the sun, and eat lunch could help cut down on bottled water, soda, and sugar-sweetened beverage purchases, and would serve as an easily found and identifiable water source.



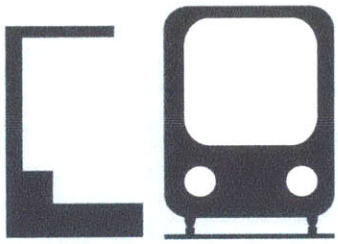
Urban streetscape

Streetscape drinking fountains should be included in any streetscape redesign or pedestrian improvement project. Project- or city-wide custom or distinctively colored fountains should be selected to harmonize with other site furnishings. Prioritized locations should be selected based on foot traffic, tourist numbers, and transit nodes.



Park

Parks are a logical and well-accepted place for public drinking fountains. Some playground fountains are inaccessible to childless adults, though, so siting drinking fountains on playground edges, half in and half out, can help, as can providing two fountains, one inside the fence and one outside, reducing expenses as they can share almost all plumbing. Locate other park fountains nearby sports fields, but not so near that they are hidden or fenced off from other users. Along paths is an optimal location.

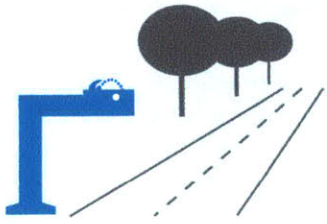


Transit stations

Drinking fountains and transit stations are a natural pairing, with people moving through often in need of a sip of water. Drinking fountains should be in highly visible, well-lit locations to minimize vandalism, and could be incorporated into other station art.

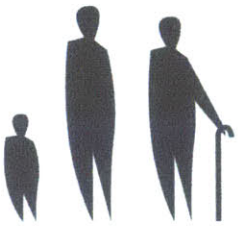
Tourist districts

Provide drinking fountains at locations where hot, dusty tourists may be most likely to buy a disposable bottle of water, creating a more friendly, accommodating city for out-of-towners.



Trailside

Locate fountains along popular running, walking and cycling trails to maximize the health impact of water access. Prioritize locations where trails intersect.



Near vulnerable populations

The elderly, children, people with lower socioeconomic positions, and people experiencing homelessness may be least able to obtain water from private sources when they need it. Cities should make sure everyone's basic water needs are accommodated.

The optimal spacing for drinking fountains for these different users may be a function of time, not of distance. In interviews, faster and more experienced runners cited optimal spacing as further than slower runners. Exertion happens on a different scale for different activities, and is also subject to climate conditions. This may explain why no bikers stopped for the drinking fountains along the Charles River during my observations – they may have been traveling the same distance as many of the runners, but their overall time and exertion may have been less. Siting drinking fountains at major urban activity nodes and then creating gridded networks of connection in between could be generally based on an assumption that water availability should occur every twenty minutes.

Travel time	User
30 minutes/mile	Elderly persons, small children, tourists
20 minutes/mile	Average walker
12 minutes/mile	Beginning/slower runners
7-9 minutes/mile	Advanced/faster runners
4-5 minutes/mile	Bikers

This suggests that bike trails and greenway connections could have further drinking fountain spacing than urban nodes and tourist districts while maintaining similar strength of healthy amenitization.

A 2009 survey in Australia found that 90% of respondents didn't know where to find a local drinking fountain.[138] Drinking fountains should be in obvious locations, easily spotted as part of a system. And a range of new technologies could be applied to this system, both to improve accessibility and to improve maintenance. In terms of access, crowd-sourced mapping technologies, photo content detection, and travel apps could help people locate fountains. For maintenance, stronger feedback mechanisms could remove the perception that drinking fountains "usually don't work." Malfunction detectors are widespread on irrigation sprinkler heads, with auto-shut-offs and administrator notification.

138 Peter H. Gleick, *Bottled and Sold: The Story Behind Our Obsession with Bottled Water* (Washington: Island Press, 2010), 106.

Similar technologies could be employed on drinking fountains. Many cities have also enacted 311 maintenance alert systems, allowing residents to report potholes and light-outages from smart-phones. With public education, maintenance workers could be more quickly alerted to drinking fountains with poor pressure, streams, or drainage. Further, municipal workers and designers may not be the best at identifying good locations for new drinking fountains. Allowing residents to place them in their neighborhoods through interactive mapping applications could find better locations, or simply inviting residents to request them in needed places. San Francisco invites residents to request locations for new bike racks – drinking fountains could be requested in the same way. Involving the community in caring for these important amenities could likewise increase feelings of ownership and decrease vandalism.

Of course, drinking fountains can't single-handedly improve places. Urban drinking fountains are ineffective in a place where no one is walking or outdoors. They are part of a package of urban redesign and amenitization that should include good sidewalks, bike lanes, places to sit and linger, and their close ally, public restrooms. (Public restrooms are subject to the same indicators of disgust and avoidance as drinking fountains, at an even stronger level, but are also necessary and beneficial in many of the same ways. The argument for well-designed, maintained, and financed public restrooms could easily form a companion paper to this thesis.)

FRAMING USEFULNESS

One of the biggest barriers to better drinking fountains is city government reluctance to take on more maintenance responsibilities. That's why no new Benson Bubblers have been built in the past fifteen years, why Boston only has drinking fountains in its parks and none in other public spaces, why the 100 Fountains competition was rejected by the New York City government, and one of the big reasons that Minneapolis cut back its drinking fountain project. Budget cuts, departmental conservatism, and basic bureaucratic siloing of responsibilities have severely undercut drinking fountains' possibilities for expansion and improvement. However, drinking fountains can promote important social goals. At a departmental level, lower-level employees may try to avoid additional burdens and managers may try to avoid hiring more staff, but city officials should consider drinking fountains from a longer-term vantage point. If a city's goals really do include reducing pollution, caring for homeless populations, improving public health, and promoting excellent urban design, drinking fountains should be treated as essential. Roadway repair, for example, is regarded as a public service that city bureaucrats could not eliminate or refuse to undertake. The provision of free public water should be regarded in the same way.

Convincing different stakeholders of the importance of drinking fountains should be a top priority. The argument should be framed in terms of their interests and incentives:

Stakeholder	Reasons for support
Users/consumers	Economic savings, health improvement, environmental concerns, more interesting urban spaces
Local Government	Health, improved public space placemaking potential, humanitarian concerns, environmental credibility, public art raises city's profile
Parks department	Help users stay outside longer, increase usefulness and beauty of park space, increase user numbers.
Federal government	Meet health and environmental goals
Homeless advocates	Water access for at-risk populations
Federal/State/Municipal Health Departments, Health advocates	Decreased consumption of sugar-sweetened beverages, increased physical activity
Environmental Advocates	Reduce reliance on bottled water
Tourism Bureaus	Better tourist comfort with longer possible stays in prime tourist areas, more tourist dollars to spend on other amenities and activities
Local businesses	Increased attractiveness for locals and tourists, corporate sponsorship possibilities with naming rights

We need visionaries armed with research and conviction to promote urban drinking fountains to high-level officials who can orchestrate design competitions, maintenance budgets, and city commitments to drinking fountain excellence. In Minneapolis, though, when the mayor who had championed the fountain competition left office, his successor had no interest in the project, and it effectively ended. System design must include implementation and management plans. Building departmental competence and commitment to drinking fountains may be the hardest work. In many cases, parks departments will be the agencies most able to care for drinking fountains, as most current drinking fountains are in parks. Working out maintenance agreements between departments and across agencies may be difficult, but it is nonsensical to have such a siloed bureaucracy that skills be redundant across the government. Alternately, Public Works departments may develop their own fountain maintenance knowledge, but these approaches should be collaborative, and residents should be informed of whom to contact about broken fountains.

In Boston, the Public Gardens languished for years until a group of concerned citizens founded the Friends of the Public Garden, donating labor and funds to restore the gardens. Perhaps the same type of concerned citizen effort could be channeled towards drinking fountains, establishing community care and ownership. A strong American tradition of civic activism may need to step in where governments falter.

CONCLUDING THOUGHTS

A drinking fountain, at its most basic, is a publicly accessible manifestation of the spring or river that every city has been founded on. Access to this water should be available not only to those at home or work, in private spaces, but also to those moving between private spaces.

In the delivery of free public water, there are four players: the municipal water source, the drinking fountain object, the potential user's perception, and the user themselves. With few exceptions, municipal water sources are clean and safe, but do require investment and commitment to excellence among residents and water officials. The drinking fountain object, as discussed, has huge potential for improvement through design and maintenance. These two approaches will impact user perception, and help the water to ultimately reach more users, having a bigger impact.

Well-designed, well-maintained drinking fountains can begin to push back against the reasons that people buy bottled water, soda, and sugar-sweetened beverages. As part of a larger American acknowledgment that reinvestment in public space and infrastructure is valuable and important, drinking fountains should not be left out. The case that this water should be free and fostered by the government rests on the assumption that environmental, humanitarian, health, and urban design goals are more important today than concerns about reducing maintenance costs. Perhaps some people and cities reject this assertion. Their public realms suffer as a result: drinking fountains are a small but important piece of a much larger debate about the role of government in the United States. The lowly drinking fountain represents something much larger than itself - whether or not we care for the common good and our fellow human beings. Is water something most people believe everyone should have safe, ready access to? If so, rethinking the drinking fountain to maximize its potential is a good place to start.

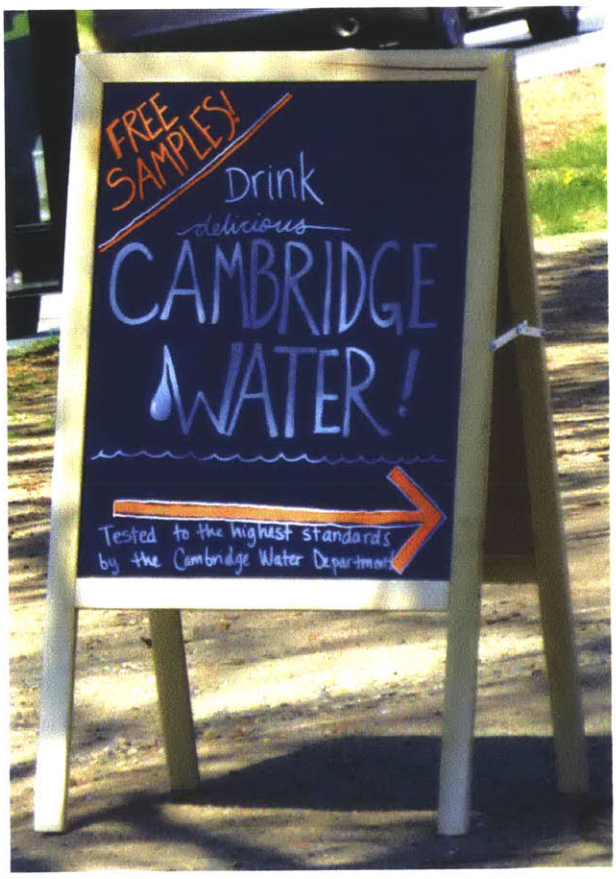
ONE LAST EXPERIMENT

This thesis has made broad recommendations for rethinking drinking

fountain attitudes and design. But I wanted to do one last experiment to see what the most minimal additional care could accomplish. To test whether an inexpensive, small-scale intervention could increase drinking fountain use, I bought a $40 chalkboard easel, some chalk, and four yards of ribbon. I returned to the drinking fountain outside of the MIT boathouse on the Charles River, Cambridge's most popular running, walking, and biking trail. I wiped off the fountain with water and a paper towel, removed a graffiti sticker, and wrapped the fountain with ribbon. I set up my sign just next to the fountain, which was modeled on the jaunty chalkboard signs that many local cafes put outside to draw in business.

Drawing on some of the reasons I believed some people avoid drinking fountains, mistrust, inattention, and low status, I tried to make the drinking fountain sign engaging and appealing. One side read, "Free samples! Drink delicious Cambridge Water! Tested to the highest standards by the Cambridge Water Department." The other side, also invoking some of the marketing words used by sugar-sweetened beverage and bottled water advertisers, read, "Thirsty? Try delicious free Cambridge Water! Hydrating! Cool! Your dog can try, too! Tested to the highest standards by the Cambridge Water Department!"

I set everything up around noon, and then sat on a partially hidden



bench and watched the drinking fountains for two and a half hours, keeping careful count of people who passed by and people who stopped. Interestingly, the percentage of runners who stopped to take a drink was statistically identical to the control numbers, around 15%. I suspect that runners' higher speeds would require more notice and time to change their minds. But the number of walkers who stopped more than doubled, from about 5% to almost 11%. (n=400, 325). Some people filled their bottles, and some filled the bowl for their dogs. Many more people walking slowed down, smiled, took a photo, started talking about it with their friends, or lingered around the sign for a few moments without drinking - but maybe they will think more about drinking eco-friendly, healthy water from public drinking fountains in the future.

An intention to drink from a drinking fountain is a bodily habit built up over a lifetime, an agglomeration of memory, perception, ideas of health and cleanliness, and learned behavior. Improving drinking fountain conditions can start with a cheap sign and a little care, and can demonstrably increase use. As we begin to reimagine free water in public space, every step counts.

BIBLIOGRAPHY

All photographs and diagrams by the author unless otherwise noted.

Abel, Elizabeth. "Bathroom Doors and Drinking Fountains: Jim Crow's Racial Symbolic." Critical Inquiry, Vol. 25, No. 3 (Spring, 1999), pp. 435-481.

"Adapting Your Practice: General Recommendations for the Care of Homeless Patients: Health Care for the Homeless Clinicians' Network." National Healthcare for the Homeless Council website, accessed April 16, 2015.

Allen, Alice Benson. *Simon Benson: Northwest Lumber King.* Portland: Binfords & Mort, 1971.

Bevir, M. *Democratic Governance.* Princeton, NJ: Princeton University Press, 2010.

Bittman, Mark. "How Should We Eat?" *The New York Times,* February 25, 2015.

Bouffard, Pierre and Rene Creux. *Fountains: Mirrors of Switzerland.* Paudex, Switzerland: Bonvent & Fontainemore, 1973.

Brody, Jane E. "Babies Know: A Little Dirt Is Good for You," *The New York Times*, January 26, 2009.

Center for Biological Diversity. "Ocean Plastics Pollution: A Global Tragedy for our Oceans and Sea Life." Accessed March 23, 2015. http://www.biologicaldiversity.org/campaigns/ocean_plastics/.

Ciparelli, Jessica. "Back where he belongs: Dr. Henry Cogswell statue once again graces Rockville's Central Park." Rockville, CT website. Accessed February 13, 2015. http://rockvillect.org/Cogswell/dedication.htm.

City of Cambridge. "Fresh Pond Reservation." Accessed March 23, 2015. https://www.cambridgema.gov/Water/freshpondreservation.aspx

City of Portland. "Adopted Budget In Brief; City of Portland, Oregon Fiscal Year 2008-09." Accessed March 20, 2015. https://www.portlandoregon.gov/cbo/article/204579.

"City Intelligence: A Public Drinking Fountain in the Park." *The New York Times*, June 11, 1859.

Cogswell Polytechnical College. "The Founding and History of Cogswell Polytechnical College." Accessed February 13, 2015. http://web.archive.org/web/20070609130631/http://www.cogswell.edu/historicalOverview.html

Coster, Helen. "The $25 Water Bottle." *Forbes,* March 19, 2009.

California Academy of Sciences. "{Tap water vs. Bottled Water} Did you know?" Seen 2013.

The Colin McEnroe Show. "For The Love of Fountains." *WNPR*, September 17, 2011.

Cranz, Galen. *The Politics of Park Design: A History of Urban Parks in America.* Cambridge: The MIT Press, 1982.

Dannenburg, Frumkin, Jackson. Making Healthy Places: Designing and Building for Health, Well-Being, and Sustainability. Washington: Island Press, 2003.

Davis, Phillip. *Troughs & drinking fountains: fountains of life*. London: Chatto & Windus, 1989.

"Drinking Fountain in Madison-Square," *The New York Times,* December 8, 1880.

"Drinking Fountains," *The New York Times*, May 6, 1859.

"Duty to Rescue," *Wikipedia*, accessed March 28, 2015. http://en.wikipedia.org/wiki/Duty_to_rescue

Fishman, Charles. The Big Thirst: The Secret Life and Turbulent Future of Water. New York: Free Press, 2011.

Fishman, Charles. "Message in a Bottle." *Fast Company Magazine,* July/August 2007.

Fleming, Ronald Lee. *The Art of Placemaking: Interpreting Community through Public Art and Urban Design.* London: Merrell, 2007.

Florida, Richard. "The power of place : the creative class." In *American urban politics in a global age : the reader*, edited by Paul Kantor and Dennis R. Judd. (New York, N.Y.: Pearson Longman, 2008), 20-40.

Foster, Lee. "Town Plans To Restore Fountain As Part Of Park Project," Rockville, CT website, April 6, 2004. Accessed February 13, 2015.

http://rockvillect.org/Cogswell/fountain.htm

Gehl, Jan. *Cities for People.* Washington: Island Press, 2010.

Gehl, Jan. *Life Between Buildings: Using Public Space.* Translated by Jo Koch. Copenhagen: The Danish Architectural Press, 2010.

Gliek, Peter H. *Bottled and Sold: The Story Behind our Obsession with Bottled Water.* Washington: Island Press, 2010.

Gleick, Peter H. "The human right to water." *Water Policy* 1 (1998): 487-503.

Goddard, Stephan B. *Getting There: The Epic Struggle Between Road and Rail in the American Century.* Chicago: University of Chicago Press, 1994.

Gordon, Cam. "First Water Fountain Installed." Second Ward Minneapolis blog, November 18, 2009, accessed March 21, 2015. http://secondward.blogspot.com/2009/11/first-water-fountain-installed.html.

Hagerty, James R. "With Bottle-Fillers in Mind, The Water Fountain Evolves." *The Wall Street Journal*, 2013.

Hamadeh, Shirine. *The City's Pleasures: Istanbul in the Eighteenth Century.* Seattle: University of Washington Press, 2008.

Harvard School of Public Health. "Fact Sheet: Sugary Drink Supersizing and the Obesity Epidemic." 2012, accessed March 12, 2015.

Haws Corporation. "Historic Drinking Fountain" and "Company History." Accessed April 16, 2015. http://www.hawsco.com/historic-drinking-fountain, https://www.hawsco.com/our-story/company-history/

Hohenadel, Kristin. "The Rise of the Sparkling Water Fountain." *Slate*, September 11, 2013.

Illinois Plumbing Code. "Title 77: Public Health, Chapter 1: Department of Public Health, Subchapter r: Water and Sewage Part 890, Illinois Plumbing Code, Section 890.720 Drinking Fountains." Accessed March 3, 2015. http://www.ilga.gov/commission/jcar/admincode/077/077008900F07200R.html

"Image breakers. Dr. Cogswell's Statue Overturned UNDER SHADOW OF NIGHT By a Silent Gang of Hoodlum Miscreants." *The Morning Call,* January 3, 1894.

Kaczynski, Andrew T. and Karla A. Henderson. "Environmental

Correlates of Physical Activity: A Review of Evidence about Parks and Recreation." *Leisure Sciences* 29 (2007): 315–354.

Kaplan, M. "Lonely Drinking Fountains and Comforting Coolers: Paradoxes of Water Value and Ironies of Water Use." Cultural Anthropology 26, number 4 (November 2011): 514–41.

Katz, Bernard S. *The Fountains of San Francisco.* San Francisco: Don't Call It Frisco Press, 1989.

King, Bart. *An Architectural Guide to Portland.* Corvallis: Oregon State University Press, 2007.

"Lead Prompts Shift to Bottled Water at Baltimore Schools," WBOC.com, 2007, accessed April 16, 2015. http://www.wboc.com/story/7325427/lead-prompts-shift-to-bottled-water-at-baltimore-schools

Lee et al. "Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy." *The Lancet* 380, number 9838 (2012): 219–229.

Lowenthal, David. "Material Preservation and Its Alternatives" *Perspecta* 25 (1989), 66-77.

Lurie, Julia. "Bottled Water Comes From the Most Drought-Ridden Places in the Country: Popular brands like Aquafina and Dasani source from catastrophically dry parts of the West." *Mother Jones*, August 11, 2014.

Lynch, Kevin. "City Design and City Appearance." In *City Sense and City Design: Writings and Projects of Kevin Lynch.* Edited by Tridib Banerjee and Michael Southworth, 465-497. Cambridge, MA: The MIT Press, 1990.

Lynch, Kevin. *The Image of the City.* Cambridge: MIT Press, 1960.

McClelland, Jim. *Fountains of Philadelphia: A Guide Paperback.* Mechanicsburg, PA: Stackpole Books, 2005.

"Minneapolis Theater Focuses on Water in Series of Performances." Minnesota Department of Health, Waterline: News and Information for Public Water Suppliers in Minnesota 15 (2007): 4.

"More Germs on Water Fountain or in Toilet Water?" *ABC News,* June 19, 2007, accessed April 9, 2015. http://abcnews.go.com/GMA/story?id=3293080.

Mumford, Lewis. *The City in History.* San Diego: Harcourt, Inc., 1961.

Munsell et al. "Parents' beliefs about the healthfulness of sugary drink options: opportunities to address misperceptions," *Public Health Nutrition*, 2015.

Nassauer, Joan Iverson. "Messy Ecosystems, Orderly Frames." Landscape Journal 14, number 2 (1995): 161-170.

NYC Department of Transportation. "NYC Plaza Program." Accessed March 26, 2015. http://www.nyc.gov/html/dot/html/pedestrians/nyc-plaza-program.shtml

Olatunji, Bunmi O., Andrew Tomarken, and Mimi Zhao. "Effects of Exposure to Stereotype Cues on Contamination Aversion and Avoidance in African Americans." *Journal of Social & Clinical Psychology* 33, no. 3 (March 2014): 229–49.

Onufrak, et al. "Perceptions of Tap Water and School Water Fountains and Association With Intake of Plain Water and Sugar-Sweetened Beverages." *Journal of School Health* 84, number 3 (2014): 195-204.

Pacific Institute. "Bottled Water and Energy Fact Sheet," 2007, accessed March 23, 2015. http://www.pacinst.org/wp-content/uploads/sites/21/2013/02/bottled_water_and_energy3.pdf

Parks, Rosa and Jim Haskins. *Rosa Parks: My Story*. New York: Puffin Books, 1992.

Patel et al. "Middle School Student Attitudes About School Drinking Fountains and Water Intake." *Academic Pediatrics V*olume 14, number 5 (2014): 471-477.

Patel et al. "Tapping Into Water: Key Considerations for Achieving Excellence in School Drinking Water Access." *American Journal of Public Health* 104, number 7 (2014): 1314-1319.

Patel et al. "Increasing the Availability and Consumption of Drinking Water in Middle Schools: A Pilot Study." *Preventing Chronic Disease* 8, number 3 (2011): A60–A60.

Patel, Anisha I. and Karla E. Hampton, "Encouraging Consumption of Water in School and Child Care Settings: Access, Challenges, and Strategies for Improvement," *American Journal of Public Health* 101, number 8 (2011): 1370-1379.

Pepsico Corporation. "Pepsico Beverage Facts," Accessed March 9, 2015. http://www.pepsicobeveragefacts.com/home/caloriebalance.

Pilot Projects. "100 Fountains: New York City." New York: 2012.

Pilot Projects. "100 Fountains: "RESPECT THE FOUNTAIN" Union

Square NYC," and "100 Fountains: "RESPECT THE FOUNTAIN" Washington Square NYC," Pilot Projects, Youtube, 2012. Accessed March 26, 2015. https://www.youtube.com/watch?v=Aa85nvBtmq8, https://www.youtube.com/watch?v=ZFq8z96zbQQ.

Portland Water Bureau. "Benson Bubblers." Accessed April 16, 2015. https://www.portlandoregon.gov/water/article/352768

Reynolds et al. "Trail Characteristics as Correlates of Urban Trail Use." *American Journal of Health Promotion* 21 (2007): 335–45.

Reisner, Marc. *Cadillac Desert: The American West and its Disappearing Water.* New York: Penguin House, 1993.

Reps, John W. *The making of urban America; a history of city planning in the United States.* Princeton, N.J.: Princeton University Press, 1965.

Rich, Bruce. *To Uphold the World: A Call for a New Global Ethic from Ancient India.* Boston: Beacon Press, 2010.

Rinne, Katherine W. *The Waters of Rome: Aqueducts, Fountains, and the Birth of the Baroque City.* New Haven: Yale University Press, 2010.

Ross, Janell. "U.S. Cities Criminalize Homelessness, Violate Human Rights Agreements." *Huffington Post,* August 26, 2011.

Rottman, Joshua. "Evolution, Development, and the Emergence of Disgust." Evolutionary Psychology 12, Number 2 (2014): 417-433.

Royte, Elizabeth. *Bottlemania: Big Business, Local Springs, and the Battle over America's Drinking Water.* New York: Bloomsbury, 2008.

Rudd Institute. "Sugary Drink FACTS: Advertising Spending." Accessed March 12, 2015. http://sugarydrinkfacts.org/resources/SugaryDrinkFACTS_Ranking_AdvertisingSpending.pdf

Rudofsky, Bernard. *Streets for People: A Primer for Americans.* New York: Doubleday & Company, Inc., 1969.

Salzman, James. *Drinking Water: A History.* New York: Overlook Duckworth, 2012.

Salinger, Sharon V. *Taverns and Drinking in Early America.* Baltimore: JHU Press, 2004.

Smith, Carl. *City Water, City Life: Water and the Infrastructure of Ideas in Urbanizing Philadelphia, Boston, and Chicago.* Chicago: The University of Chicago Press, 2013.

Sorensen, Steve. "Selecting a Drinking Fountain." *Reeves Journal: Plumbing, Heating, Cooling* 84, number 2 (February 2004): 58–60.

Spirn, Anne Whiston. "The Poetics of City and Nature: Towards a New Aesthetic for Urban Design." *Landscape Journal* 7, number 2 (1988): 108-126.

"Starbucks charged rescuers for water." *The Guardian*, September 26, 2001.

Sterling, Donald J. "Faces pass in 40-year-long parade." *The Oregonian,* February 2, 1992.

Szasz, Andrew. *Shopping Our Way to Safety : How We Changed from Protecting the Environment to Protecting Ourselves.* Minneapolis: University of Minnesota Press, 2007.

"TAPMPLS." Accessed March 21, 2015. http://www.tapmpls.com/learn.

Thaler, Richard H. and Cass R. Sunstein. *Nudge: Improving Decisions About Health, Wealth, and Happiness.* New York: Penguin Books, 2008.

Timm, Jane C. "San Francisco bans sale of plastic water bottles on city property." MSNBC, 2014. Accessed March 23, 2015. http://www.msnbc.com/msnbc/san-francisco-bans-sale-plastic-water-bottles-climate-change.

Trémolet, Sophie and Sara Browning. "The Interface Between Regulatory Frameworks and Tri-Sector Partnerships." London: BPD Water and Sanitation Cluster, 2002.

Homelessness Law. "UN to Sacramento: You're Violating Human Rights of Homeless People," 2012. Accessed April 16, 2015. http://homelessnesslaw.org/2012/02/un-to-sacramento-youre-violating-human-rights-of-homeless-people/

United Nations World Tourism Organization. "UNWTO Tourism Highlights: 2014 Edition." 2014. Accessed March 25, 2015.

US Census Bureau. "How the Census Bureau Measures Poverty." Accessed March 21, 2015. http://www.census.gov/hhes/www/poverty/about/overview/measure.html.

US Center for Disease Control. "Number of Deaths for Leading Causes of Death," and "Heart Disease Prevention: What you can do," 2013. Accessed March 12, 2015. http://www.cdc.gov/nchs/fastats/leading-causes-of-death.htm, http://www.cdc.gov/nchs/fastats/heart-disease-prevention.htm.

Vitamin Water. "Vitamin Water Nutrition Facts." Accessed March 8, 2015. www.vitaminwater.com.

Walters, Kim, and Geoff Cram. "Drinking Water in Schools: Hygiene Standards at Fountains." *Nutrition & Food Science* 32, number 1 (February 2002): 9.

"Weeding out bad sculpture." *The New York Times,* March 13, 1894.

White, Kristine. "Sip a Cool One Courtesy of Mr. Benson." *The Portland Tribune*, 2001.

Whyte, William H. *The Social Life of Small Urban Spaces.* New York: Project for Public Spaces, 1980.

Wolf, Jeffrey. "How dirty is that drinking fountain? 9NEWS puts them to the test." *9News*, May 23, 2011. Accessed March 29, 2015. http://archive.9news.com/news/article/199840/103/how-dirty-is-that-drinking-fountain-9news-puts-them-to-the-test.

World Health Organization. "WHO opens public consultation on draft sugars guideline." 2014. Accessed March 12, 2015. http://www.who.int/mediacentre/news/notes/2014/consultation-sugar-guideline/en/

"4.15 Drinking Fountains and Water Coolers," ADA Compliance website. Accessed April 16, 2015. http://www.ada-compliance.com/ada-compliance/drinking-fountain-water-coolers.html

APPENDIX: SURVEY

Drinking Fountain Survey

How likely are you to drink from this drinking fountain if you're thirsty?

1 2 3 4 5

Very unlikely — Very likely

If you were thirsty, what would you be most likely to do?

- ☐ Drink from this drinking fountain
- ☐ Buy a bottle of water
- ☐ Buy a different beverage (what?_____)
- ☐ Drink from your own refillable bottle
- ☐ Other _____

How would you rate the design of this drinking fountain?

1 2 3 4 5

Ugly — Beautiful

How much effort do you think was put into designing this drinking fountain?

1 2 3 4 5

Very little — A lot

Would you encourage a thirsty child to drink from this drinking fountain? (circle one)

No Yes

How clean and safe do you think the water from this drinking fountain is?

1 2 3 4 5

Unclean and unsafe — Very clean and very safe

When you are thirsty, how often is there a convenient drinking fountain nearby?

1 2 3 4 5

Rarely — Usually

Political affiliation (circle one):

Green Party Democrat Republican Libertarian Tea Party Other: _____

Other comments about drinking fountains?

_____

_____

_____

Massachusetts Institute of Technology

This study is part of a master's thesis through MIT's Department of Urban Studies and Planning on drinking fountains as urban infrastructure. All responses are confidential.

ACKNOWLEDGEMENTS

Many thanks to: my thesis committee, Anne Whiston Sprin, Sam Bass Warner, and Brent Ryan, for their help and insights; Tim Hall of the Portland Water Bureau, Mary Altman of the Minneapolis Public Art Commission, Scott Francisco of Pilot Projects, and Josh Levin of the Cambridge Health Alliance for their generosity with their time and knowledge; and to my wonderful parents, husband, and many family members and friends who have patiently stood around for so many years while I have paused to extensively photograph and taste-sample drinking fountains.


HINE CO