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BELLE GLADE, FLORIDA, the setting for *Harvest of Shame*, Edward R. Murrow's famed 1960 documentary about migrant farmworkers, has changed all too little in the ensuing decades. It has received international media attention two times since: in the 1980s, when it was named the AIDS capital of the world for its high per capita rate of infection, and again in 2003, when a hanging death brought reporters from around the globe to look into a possible lynching. It was a suicide. But those reporters found plenty of stories to tell—of miserable migrant conditions, of broken race relations.

Belle Glade lies on the far west side of Palm Beach County, surrounded by smoky sugarcane fields and flat winter vegetable farms. On the far east side of the same county is a city that might as well be a million miles away. Snuggled between the azure-blue Atlantic Ocean and a lagoon called Lake Worth, the barrier island of Palm Beach has been winter playground to the nation's wealthy since the 1890s, when Henry Morrison Flagler built his Royal Poinciana Hotel and brought his Florida East Coast Railroad there.

Some of the most spectacular mansions in the United States are hidden behind thick stands of palm and lush tropical foliage along AIA in

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Palm Beach; Mediterranean compounds where the swimming pool edges are designed to look as if they are vanishing into the Atlantic Ocean. The pools, elaborate fountains, and, most of all, landscaping make the millionaires who live here—or do not live here, as the case may be in summer—some of the heaviest residential water users in the state. Their average daily use is 13,000 gallons.¹ Back in Belle Glade, the residents, a third of whom live below the federal poverty level, use a lot less: an average of 1,000 gallons a day per household.

So who do you think pays more for water? Answer: the people of Belle Glade. Families pay a flat rate of \$62.50 a month for water and sewer service, no matter how much they use.² The rate is on the high side of Florida water bills statewide. Residents of the city of Palm Beach have bills closer to the state average: they pay a little less than \$30 a month for water and sewage.³ They are also charged based on the amount they use, so people who use less pay less.

When it comes to water, Palm Beach County is like the globe in miniature. Worldwide, the poor generally pay much more for water than the rich. In a different way, Palm Beach County is a microcosm of the United States as a whole. Across the country, water is priced irrationally, and often inequitably. Most of all, it is priced too low. As a result, Americans do not think about turning off the tap the way they edge up the thermostat on summer days to save a few bucks.

Through general tax revenue, we taxpayers buy the infrastructure that treats water to meet federal drinking-water standards and makes it taste good, too. But these costs are not reflected in our water bill, usually the least painful check we write each month. This is how Americans end up using treated drinking water to flush toilets, wash clothes, and water lawns. More than half of all home water use in the United States goes to keeping grass green. About 14 percent of it is never used at all but leaks out of our pipes.⁴

“This is the only country that you can travel on all the compass points to any city you want, turn the spigot on and get a glass of water, drink it and have a very, very high assurance of safe, high-quality drinking water,” says Dr. Ron Linsky of the National Water Research Institute. “But it is the cheapest natural resource in America for the highest quality in the world. The under-pricing of this resource has led to the undervaluing of water.”⁵

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In the third world, people often pay more for water because they do not have the municipal systems to bring it to them. Some must buy it by the liter. The World Commission on Water for the 21st Century found that people in developing countries pay an average twelve times more per liter of water than fellow citizens who are hooked up to municipal systems. In some cities, the poor pay huge premiums to water vendors over the standard price to those on municipal systems: sixty times more in Jakarta, Indonesia; eighty-three times more in Karachi, Pakistan; and one hundred times more in Port-au-Prince, Haiti. In slums around many cities, water accounts for a big slice of household expenses: 20 percent in Port-au-Prince, for example. "It is stunning that the poor pay more than 10 times as much for water as the rich do, and get poor-quality water to boot," says Ismail Serageldin, the commission's chairman. "A direct link exists between this lack of access and a host of diseases that attack the poor in developing countries."⁶

Some 1.1 billion people around the world lack access to safe water—a number feared to grow to between 2.6 billion and 3.1 billion by 2025. The United Nations attributes 2.2 million deaths a year to poor water and sanitation. The specifics range from diarrhea, in developing countries the cause of 15 percent of all deaths of children under five, to heightened incidence of cholera, typhoid, and viral hepatitis.⁷

The point is that clean water is extraordinarily valuable, the single most important necessity to human life. And people are obviously willing to pay for it. Yet while people in some third-world slums pay up to a quarter of their income for water,⁸ most Americans spend less than 1 percent of household income for water.⁹ North Americans enjoy not only the highest-treated but by far the cheapest water on the planet. The average U.S. consumer pays \$2.30 per thousand gallons. That is about \$20 a month for an American family. Among all industrialized nations, only Canadians, with their vast surface-water resources and relatively small population, pay less than Americans. Germans pay the highest price for water among industrialized countries, at a little over \$8 per thousand gallons.¹⁰

In the United States, the price of water is based upon politics rather than economics. Local elected officials help keep water cheap in places like Palm Beach—even in arid cities such as Las Vegas. Vegas residents pay just \$2 per thousand gallons. That is less than average for the United

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States as a whole despite the overwhelming effort it takes to maintain that oasis in the desert.¹¹

So *why* is water cheap—not just in the United States but across the industrialized world? Those of us who are not economists remember Adam Smith, father of the discipline, as the invisible hand guy. The eighteenth-century Scottish philosopher created his intellectual framework for the free market with the metaphor of an invisible hand, showing how self-interest can guide the most efficient use of resources in a nation's economy to result in overall public good.

But when it comes to water, Smith's laissez-faire pronouncements don't float. Smith said as much in *The Wealth of Nations* in 1776, when he pondered a problem still argued over by economists. It is called the Water-Diamond Paradox. Smith put it this way: "The things which have the greatest value in use have frequently little or no value in exchange; and, on the contrary, those which have the greatest value in exchange have frequently little or no value in use. Nothing is more useful than water: but it will purchase scarce any thing; scarce any thing can be had in exchange for it. A diamond, on the contrary, has scarce any value in use; but a very great quantity of other goods may frequently be had in exchange for it."¹²

In other words, why do we give our most valuable resource away for practically nothing and pay gobs of money for one that has no practical purpose? The answer, of course, is relative scarcity. It is just like when people grouse that society values professional baseball players over schoolteachers. The fact is, there are about 4.4 million teachers in the nation.¹³ But there are only about ten guys in Major League Baseball who can hit forty or more home runs a year.

While water may seem both plentiful and free, pumping it, treating it, and piping it around are all expensive endeavors. At the Yale School of Forestry and Environmental Studies, the environmental economist Sheila Cavanagh Olmstead throws out two more biggies that most of us do not think about when we turn on the tap: long-run marginal costs and opportunity costs. The marginal costs refer to the long-term water supply expenses that will result from today's decisions to consume more water. Every new housing development, every new golf course, every new tree planted will have some impact on future water-supply needs. "As long as those long-run issues are not folded into the current price of water, no one is going to understand the true value of the resource," Olmstead says.¹⁴

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New sources of water required to meet these increasing demands cost more to develop and transport than older sources. Desalinated water, for example, costs about four times more than groundwater to deliver to consumers. Yet most utilities price water by averaging low-cost older sources with high-cost new facilities. This calculation ensures consumers will never pay the true costs of water.

Besides not taking expensive new facilities into full account, local governments often ignore another key cost when pricing water. The bulk water we give away to farmers, water bottlers, or anyone else has alternative uses that ought to be taken into account. But these resource “opportunity costs” usually go unconsidered. Think of these costs as lost opportunities: The idea that every gallon used is one not used to produce electricity through hydropower, for example, or not available for wetlands restoration or environmental preservation or to meet some other value to society.

In the United States, the explosion of federal water projects in the twentieth century created the illusion that individuals and local governments did not have to worry about the effort or costs of providing water. In the West, since the federal government picked up the tab for the Bureau of Reclamation’s more than 600 dams and reservoirs and 55,000 miles of irrigation canals and conduits, tens of millions of people considered it perfectly rational to live, work, and farm in what should have been the most inhospitable land in the country. In much the same way, Olmstead says, pouring thousands of gallons of water on your lawn in arid Arizona “is a perfectly rational decision on the part of homeowners because water prices are so low.”

The political pork barrel rolls on. Members of Congress from water-stressed states are forging coalitions to make sure the federal government subsidizes desalination plants all over the nation, the subject of more attention in chapter 11. This time around, the subsidies will make it seem perfectly rational to build more golf course communities in California, Texas, and Florida. But what is good for retiring baby boomers who like a round of eighteen holes will not be so for their children and grandchildren. If the current generation of Americans refuses to pay the true cost of water, future generations will face not only substantially higher prices but significant interest on the growing national debt.

Following the great dam-building era of the early twentieth century, the next wave of water-infrastructure subsidies came in the 1970s after

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passage of the Clean Water Act and the Safe Drinking Water Act. The federal government doled out billions of dollars to local communities to help upgrade infrastructure to comply with the tougher standards. That trend slowed during the Reagan Revolution when the feds tried to shift costs back to local utilities. Instead, the utilities simply did not do as many upgrades. Now, the pipes that distribute clean water and collect wastewater in most cities and towns have passed their life expectancy. The result is a nearly \$1 trillion bill coming due for critical drinking-water and wastewater investment in the United States over the next twenty years.¹⁵ Construction and repair of water and wastewater systems is now the number one infrastructure need in the United States.

“We can turn on faucets at any time of the day or night and expect clean water,” says G. Tracy Mehan III, former assistant administrator of the EPA’s Office of Water. “Monthly water bills, for most of us, hardly approach the cost of cable TV. But underneath this rosy picture lies a monster.”¹⁶

Australians call the monster the Nessie Curve. They named it after the Loch Ness Monster because so much of it, just like water pipes, lies beneath the surface. The same demographics that created the looming future shortfalls for Social Security, Mehan says, are creating a similar liability for the nation’s water systems. Thousands of miles of pipe laid more than one hundred years ago must be replaced in the next couple decades. Treatment plants have a much shorter life of between twenty-five and forty years. They also will have to be replaced or overhauled in the coming years to meet EPA standards.¹⁷

Yet few politicians talk about increasing the price of water to pay for these investments; they do not win votes by signaling citizens to turn off the spigots through higher prices or user fees. Instead, reelection requires that they bring home the bacon to local voters, landing water projects that make constituents think they are getting something for nothing. The costs, of course, will be passed on to future taxpayers.

Americans will plunk down a thousand times more for a pint bottle of water at the corner 7-Eleven than they pay for their tap water, even though there is scant difference between the two. Yet we fend off local governments’ attempts to raise rates for water and sewage. Somehow, we value the water in the plastic but not from the tap. Why? Americans have been brought up to believe that their water is a right, a very low-cost one, rather than a commodity. And they do not take kindly to public officials

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who would try to charge them what it truly costs. Public outcry often convinces politicians to defer infrastructure investment, maintaining shabbier and shabbier systems on fewer dollars.

Lots of local elected officials can recount the story of the hapless Tucson, Arizona, City Council: In the late 1970s, following a severe drought, the city of Tucson became the first in the nation to adopt marginal cost rates for water; that is, the city wove the costs of additional water into its price. One year after adopting those rates, the entire city council was voted out of office.¹⁸ When stewardship is rewarded this way, it is easy to see how it has become the exception rather than the rule.

A more visible monster than the Nessie Curve is the threat of terrorism to the nation's water supply. It is also a costly one. In his State of the Union Address in 2002, President Bush warned Americans that U.S. soldiers fighting in Afghanistan had found diagrams of U.S. public water facilities.¹⁹ That same year, Congress passed the Bioterrorism Act that required drinking-water utilities to conduct "vulnerability assessments" and take a harder look at emergency response plans. The resulting reports exposed significant security needs, from small things like fixing fences to biggies like relocating pipelines and distribution mains. The most critical, early fixes are estimated at \$1.6 billion nationwide, according to the American Water Works Association.²⁰

But again, no one dares argue that local consumers should pay this bill through the issuance of bonds; that would require us to face costs directly. Elected officials instead will hide costs in national legislation and reallocate them, predicts Sanford V. Berg, director of Water Studies at the University of Florida's Public Utility Research Center. This distortion, he says, will result in higher water costs overall. "When we subsidize capital investments and not operating costs, utilities will tend to over-invest in facilities," says Berg, "because someone else is footing the bill."²¹

It has a familiar ring, doesn't it? Discussed in chapter 3, this was the rationale used to drum up local support for the Animas-La Plata dam now underway in Colorado: "WHY WE SHOULD SUPPORT THE ANIMAS-LA PLATA PROJECT: BECAUSE SOMEONE ELSE IS PAYING MOST OF THE TAB! We get the water. We get the reservoir. They pay the bill."

During the worst of Florida's last drought, when the Council of 100 released its controversial report on water supply, other organizations

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such as the Florida Chamber of Commerce quickly followed with recommendations of their own. Among the ideas, from desalination to water transfers to a statewide water board, not one word was uttered about the cheap price of water. "It's an absolute deal killer," says Berg. "The most obvious, powerful and direct way to manage the water problem would be to pay for new investments through higher prices.

"Politically, we seem to believe there is a free lunch, or at least a lunch that someone else will pay for," he says. "Such 'mathemagic' is a recipe for a water crisis in the not-too-distant future."²²

Used to be, advocating true-cost pricing for water was the job of conservatives over at the Cato Institute and other right-leaning think tanks. Traditionally, people looked at pricing in one of two ways: Economists generally argued that water should be treated as an economic good; users should pay the costs of the service, an incentive to conserve. The human-rights and environmental communities, on the other hand, argued that water is a basic necessity and a human right, and that it should not be viewed as an economic commodity. But arguing one way or the other does not make sense because both sides are right. If you do not price water, people are going to waste it. Yet citizens also have a right to clean water.

As it becomes increasingly obvious that users will waste free water until it is gone, environmentalists increasingly view water through an economic lens. Users will waste free water even against their own interest, as in the case of the Florida developers who in some areas drained water until there was none left for new growth. Previous chapters detail how Florida and other eastern states hand over millions of gallons of water a day to most anyone who wants it: farmers who then may waste it on inefficient flood irrigation, bottled-water companies that turn it into a commodity and sell it for a dollar a liter. So while a watermelon in the supermarket bin has value, and a bottle of Evian on the restaurant menu has value, the water in our aquifers, rivers, and streams has virtually none. Groundwater and surface water, when no one has to pay for them, will be abused until no one can use them.

This inevitability is known as the Tragedy of the Commons. In his essay by that name in 1968, biology professor Garrett Hardin wove the story of a village with a commons where herdsmen graze their cattle. There are no rules, but each herdsman decides how many cattle to graze.

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It is to the advantage of each herdsman to keep increasing the size of his herd, even when it becomes clear that the pasture is being overgrazed. "Therein is the tragedy," Hardin wrote. "Each man is locked into a system that compels him to increase his herd without limit—in a world that is limited. Ruin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons. Freedom in a commons brings ruin to all."²³

The Ipswich River watershed in northeastern Massachusetts could be Hardin's commons. Covering a 155-square-mile area with 22 towns, the watershed powered the region's economic development, giving water, sustenance, power, and transportation to early settlers and their descendants. Its abundant fisheries and famous clam beds were the shimmering pearls of the economy, even as, in the early twentieth century, the communities of the Massachusetts North Shore increasingly merged into urban Boston. Fueled by commuter rail lines and highways, the North Shore began to sprawl with big, thirsty housing developments that used, because of their lawns and swimming pools, 50 percent more water than traditional developments in the watershed.²⁴

Water supply should not be a problem in this region, blessed with an abundant average forty inches of rainfall each year. Yet communities along the Ipswich River have overpumped groundwater to the extent that, over the past decade, parts of the river have gone completely dry each summer. The river dries up when the lawn sprinklers whir and the pools fill, even though average withdrawals, some 30 million gallons a day, are well within the amount permitted by the Massachusetts Department of Environmental Protection. In other words, state environmental regulators have handed local utilities more water than exists in the river to supply 330,000 people and thousands of businesses. This "almost exclusive focus on meeting the growing consumptive demand for water, while ignoring the other functions and values of the river," has led to a crisis with dire consequences for the ecosystem, the shellfish industry, and recreation.²⁵ About a third of the clam beds for which the Ipswich is so well known are closed at any given time. Fish kills are becoming more common, causing a clear environmental loss as well as a stink. Kayaking, canoeing, fishing, and other ecotourism pursuits dry up, obviously, when the river does.²⁶

Kerry Mackin, executive director of the Ipswich River Watershed

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Association (IRWA), argues an underlying cause of the Ipswich crisis is that permit holders pay nothing to withdraw water from the basin. In 2003, the IRWA and others filed suit against the Massachusetts Department of Environmental Protection. They charged the department's overpermitting violated its own regulations, causing "drastically reduced stream flows in the Ipswich River resulting in fish kills, habitat destruction and severe ecosystem impairment." The IRWA wants the state to charge utilities for withdrawals to better reflect the true value of water, encourage more efficient use of it, and raise money for conservation and other programs. Toward those ends, the organization conducted a resource economics study of the river that asked residents about their willingness to pay more for water. Respondents were willing to pay an average \$31 more per household a year to "restore flows needed to sustain healthy fish populations."

The Tampa Bay Water Wars were another classic example of the Tragedy of the Commons. Local officials sucked up as much water as they could for their own constituents and turned a blind eye to the larger consequences. Not only did they contaminate their own groundwater but they dried up wetlands, triggered sinkholes, and drained lakes. Their actions devastated local ecosystems as well as property values.²⁷ During the Tampa Bay crisis, the Florida legislature cracked down on the state's water-management districts and made them figure out the "minimum flows and levels" that must stay in-stream to sustain water supply. The minimum-flows requirement had been on the books since 1972, but the water districts had never tackled the massive calculation job. When they finally did, some districts saw that they had overpermitted groundwater use by millions of gallons a day.

In Tampa Bay, residents whose wells went dry and whose lake beds turned to weeds have come to value water. So have out-of-work Massachusetts clammers and fly fishermen who can no longer catch native trout in the Ipswich River. It sometimes takes a crisis for Americans to appreciate their readily available water.

In 2005, heavy rains raised the turbidity of drinking water in Phoenix, and the city issued a boil-water notice as a precaution. For the first time—and for just one day—1.4 million people were without a service they took for granted. Jokes went around about the crisis of a day without a latte. "Welcome to Phoenix," deadpanned one editorial writer, "where our library computers are filtered better than our drinking

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water.”²⁸ Guffaws aside, the one-day alert was a real hardship for some. Restaurants shut down. Hospitals had to postpone surgeries.²⁹

In the fall of 2003, during the huge power blackout that stunned the northeastern and midwestern United States, Cleveland and Detroit were among the major cities whose pumping stations lost power, cutting off drinking-water service as well as water pressure for fighting fires. The stress of bringing the aging water systems back on-line doubled the number of water-main breaks in the cities. The blackout also caused major sewage spills into waterways in Cleveland and New York.³⁰

Residents of Milwaukee, Wisconsin, know the value of clean water better than most Americans. In 1993, the community had an outbreak of cryptosporidiosis, a parasite that causes gastrointestinal illness that can be transmitted through water. More than 100 people died; some 400,000 became sick. Says Kathryn “Katie” McCain, a past president of the American Water Works Association who put in three decades with Dallas Water Utilities: “It was a tragic reminder that the work water suppliers do every day has life and death consequences.”³¹

It does not make sense to wait for a terrorist attack before spending money on emergency generators to pump water, or to wait for bacterial outbreak before upgrading filtration. The price elasticity of demand measures how consumers respond to changes in price. Opponents of water-rate increases often argue that water demand is price inelastic—in other words, that consumers do not respond when rates go up because water is a basic necessity. But several recent studies show this is not true. In 2005, Florida’s water-management districts funded a sixteen-community study on how rates affect single-family residential water use. It made a clear statistical case that price increases lead to lower use. The study found that in homes with access to alternative sources, such as reclaimed water, increasing the price from \$1.20 to \$2 for every thousand gallons reduced per capita use from 140 gallons a day to 116 gallons a day, or 17 percent. For families that did not have access to alternative water supplies, the same price increase saw per capita use drop from 161 gallons a day to 140 gallons a day, or 13 percent.³²

Advocates for the poor worry that higher water rates place an undue burden on low-income residents. Berg argues that since we are already subsidizing well-off Americans with cheap water, it would make more sense to subsidize water for the poor and make everyone else pay the true cost of the resource. “Targeted subsidies make much more sense than

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sending uneconomically low price signals to everyone including the wealthy,” he says.

In the United States and even in some parts of the world with intractable water-supply problems, such as India, water-pricing reform has begun to spur conservation and set aside more water for natural systems. Price reform does not always mean higher rates; it can mean lower rates for smaller blocks of water use and higher rates for bigger blocks. It also should not be aimed solely at utility customers. Pricing water properly may be most important in agriculture, where water subsidies are larger and more pervasive than in any other realm of water use.³³ In the West, Imperial Valley farmers pay \$15 an acre-foot for the same Colorado River water that costs urban users in Los Angeles \$400 an acre-foot. And if farmers have to pay more, the newer, plastic commodities should have to pitch in, too: states hand groundwater to bottled-water companies for free, and the companies then charge consumers a thousand times more than the cost of virtually identical tap water.

Will water become the oil of the twenty-first century? This was the question, in recent years, on the minds of everyone from market speculators to U.S. intelligence agents. Peter Gleick of the Pacific Institute gave the old question a new spin: “Are we going to permit water to become a commodity like oil, to be over-pumped and under-priced, and used wastefully, leading to water wars, international conflict and competition and environmental destruction?” Or could we learn from the lessons of oil dependence and make sure water “is used efficiently and allocated properly, through national policies and international cooperation, and that the environment is protected from damage caused by its extraction?”³⁴

What better place to hunt for the answers than the oil-rich, water-poor state of Texas? There, the nation’s most infamous oil speculator had turned his attention to a brand-new resource. No one could accuse Boone Pickens of undervaluing water. He wanted to set its price tag nice and high.