sonal conservation— it's still going to be a drop in the bucket. If you start being vocal about foreign and domestic policy, though, and showing that the public cares— then we have some hope of avoiding bloody water wars & human thirst.

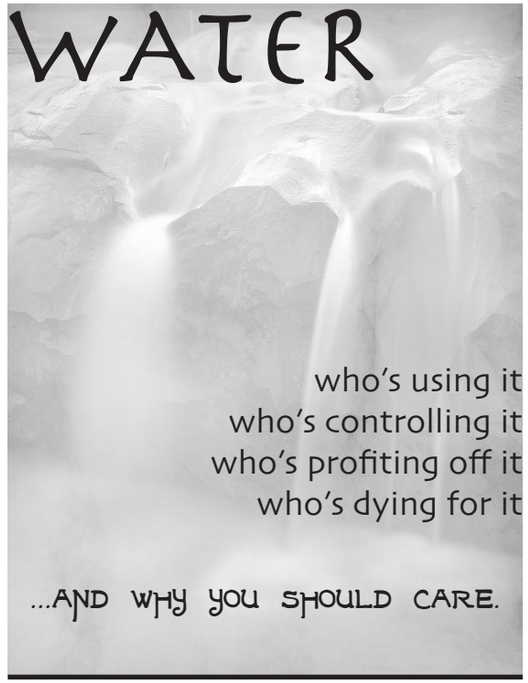
Right now, this is a problem we in the U.S. can still cast aside as a "far-away" problem, a television-commercial-for-aid-agencies type problem. Soon, it won't be. While the oil crisis will probably impact us sooner on a financial level, the water crisis is far more dire. Oil is life, compressed; but water is the source of life. Arid areas of America like Las Vegas, Phoenix, and Los Angeles will be the first to feel shortages, but water is an issue across the country. Our public systems are at risk for privatization, too, and we live on a small planet: the water conflicts of other countries will impact our foreign policy. It's not just the problem of other continents.

This century will demand a lot from us. It will demand that we know more than we want to know, and look deeply at problems we may not want to personally deal with. It will demand reverence and gratitude for what we have, and sacrifice; and it will ultimately be worth it, because the life we'll gain at the end will be more worthwhile. If we can learn to view water as life-giving and sacred, we've added meaning to water & added meaning to our lives. Still, there's more brain-changing we have to do besides giving water the love it's due: we have to see the connections between the water issue and the other critical issues we face. When you are tempted to buy a new shirt, the decision's not just about your cash, and American debt, and the trade deficit, and sweatshops abroad— it's about the water it took to manufacture the shirt, and the petrol it took to transport, and the climate change the petrol's causing... all these things. Simplify now, or be forced to simplify later. The problems we face are systemic. Water, however, is at the heart of it all, and if we can learn to use water wisely, chances are good we can sort out the rest of our problems before it's too late.

"Water is the only natural element that provides a reflection of ourselves; long before mirrors, it alone showed us what we looked like. It is doing that metaphorically now as well ... It's making us look at ourselves to see if we have the capacity to figure out how to share what nature has provided to sustain us, or if we can only fight over it."— Jeffrey Rothfeder

1. Postel, Sandra. *Last Oasis: Facing Water Scarcity.* New York: WW Norton, 1992, updated 1997, p. 28. 2. Shiva, Vandana. *Water Wars: Privatization, Pollution, and Profit*. Cambridge: South End Press, 2002, p. 2. 3. qtd. in Rothfeder, Jeffrey. *Every Drop for Sale*. New York: Putnam, 2001. 4. Shiva, 9. 5. Shiva, 56. 6. Postel, 100. 7. Shiva, 34. 8. Postel, 190. 9. Ibid. 10. Shiva, ix. 11. Rothfeder, 13. 12. Shiva, ix. 13. Postel, 73. 14. Rothfeder, 53. 15. Shiva, 74. 16. qtd. in Postel, 77. 17. Postel, 189. 18. Shiva, 88. 19. Rothfeder, 119. 20. Clarke and Barlow, "The Battle for Water." *Yes,* Winter 2004, also online at http://www.yesmagazine.org/article.asp?id=669. 21. Rothfeder, 11. 22. Postel, 128. 23. Ibid, 127. 24. Ibid, 188. 25. Rothfeder, 113. 16. Ibid, 12.

for more resources & information, visit
www.createdestroyenjoy.net/water



THE FIRST QUESTION people tend to ask about water is this: if water is a renewable resource— if it flows in a cycle, like we learned in elementary school— then how can it be "wasted"?

You probably know that only 2.5% of the earth's water is freshwater, and that most of that is frozen in the ice caps. The rest of that water is largely soil moisture or trapped underground, leaving a fraction of 1% of the world's water available for human use. When we talk about "running out" of water, we are talking about a supply-and-demand problem (as with oil, our other dwindling resource). We have an increasing demand for water, as population rises. As water advocate Sandra Postel puts it, "The water cycle makes available only so much each year in a given location. That means supplies per person, a broad indicator of water scarcity, drop as population grows."[1] So, if you're one of the five thousand people that moves each month to Las Vegas, you're increasing the demand in an area with an already low supply. Much of our water, especially in arid lands, depends on aquifers (underwater reserves of water). Due to high demand, these aquifers are being pumped faster than rainfall can recharge them. Consider: the famous Ogalalla aquifer, which runs from Texas to South Dakota, is being pumped eight times faster than nature can refill it. So while demand is increase, supply is decreasing

WAIT... HOW CAN THE SUPPLY DECREASE IF WATER FLOWS IN A CYCLE?

Along with the problem that we're using more than nature can recharge (like with the aquifers), there's the fact that we've polluted a lot of the available water. For example, in Poland, 75% of the rivers are too polluted for even industrial uses. But on a more complex level, our general activities have destroyed the earth's capacity to receive, absorb, and store water, as activist Vandana Shiva explains. "Deforestation and mining have destroyed the ability of water catchments to retain water... monoculture agriculture and forestry have sucked ecosystems dry...[and] the growing use of fossil fuels had led to atmospheric pollution and climate change, responsible for recurrent floods, cyclones, and droughts."[2]

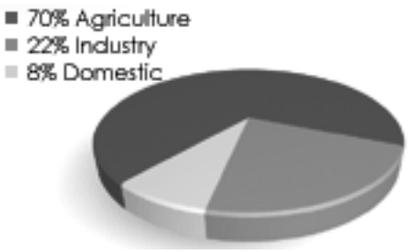
So there is a cycle of renewal at work, but this delicate cycle depends on a lot of complex factors, including rainfall, soil, weather, and river flows— all of which humans have impacted, to our own misfortune. We've cut down half the planet's forests, so there's less soil and earth to stop rainfall from going directly to the rivers. We've dammed up the rivers, which interrupts their complex ecosystems— in the U.S., only 2 percent of the rivers aren't dammed— and some rivers, like the Colorado and Rio Grande, hardly even make it to the sea. So while the earth can't run out of water— humans can run out of freshwater, and we are. For us, water is a finite resource.

And for many people in the world, access to this finite resource is a matter of survival. Diseases like cholera and dysentery are caused by unsafe water, and the number one cause of infant death worldwide is unsanitary water. In places like Haiti and Gambia, people only have 3 liters of water per day— here, in the U.S., we use 500 liters per day. The average toilet made before the mid-1990s uses 23 liters in a single flush. It is important to understand this vast inequality as we explore the issue of water in our world. As Peter Glieck puts it, "It's a human tragedy, which could explode into a human bloodbath."[3] For us, the water crisis is coming; for the 2.2 billion people that live below a minimum level of water need,* it's already here.

* This 50-liter requirement of minimum need is based on the following: 5L for drinking, 10L for cooking, 15L for bathing, and 20L for sanitation. Obviously, many people get much less than this.

Where does the water go?

Let's take a closer look at how we use our planet's precious water.



The number one human use is agriculture, which accounts for 65 to 70 percent of global water use. That doesn't sound so bad— we need food, right?— but today's agribusiness is painfully water-inefficient. The "Green Revolution" has ended up displacing drought-resistant local crop varieties and replacing them with water-guzzling crops[4]. Instead of growing drought-resistant crops in arid lands (like millet or sorghum), we grow vegetables in California's Central Valley and cotton in Arizona. Cotton has increased 300% in the west, while it's dropped 30% in the lush southeast.[5] Not only are the wrong crops grown in the wrong places, but they could be irrigated much better. "Worldwide, irrigation efficiency is estimated to average less than 40 percent, which means the bulk of the water diverted for agriculture never benefits a crop. Although some of the 'lost' water returns to streams or aquifers, where it can be tapped again, its quality is often degraded as it picks up salts, pesticides, and toxic elements from the land."[6] What's foreign corporate control of their resources thrust upon them; that water is a right—or a gift from nature—not a commodity. To quote activists Tony Clarke and Maude Barlow, "People need water to live. Water must be provided equitably to all people and not on the basis of the ability to pay."[20]

There are two French conglomerates, Vivendi and Suez, who control water companies in 120 countries on 5 continents, and distribute water to 100 million people.[21] Vivendi's entertainment empire, Vivendi Universal (which brings you music like Bob Marley, video games like Warcraft, and countless movies, etc.), is supported by the "cash cow" of its water empire. Even corporations like Bechtel and Enron can't keep up with these two. Coca-Cola and Pepsi, though, are trying to get in on the water action through their bottling operations. Regarding bottled water: aside from generating huge amounts of plastic, bottled water is often from municipal taps and has no proven health benefits; in the U.S., each sip of bottled water costs 1,000 times the price of a sip of tap water (does it taste 1,000 times better?) To make a long story short, water is big business, whether it's coming from a bottle or the tap. And this business is growing.

so...

What are you supposed to do? I won't deny it's overwhelming. But there's a lot of technology and information out there on how to use water efficiently. Small-scale water management design, low-pressure sprinkler, drip irrigation, and agencies that jointly manage surface water and ground water can go a long way in dealing with that 65-70% of water consumed by agriculture. Tech doesn't have to be high-tech or expensive: simple, ancient farming practices like terracing and stone walls can give water a chance to seep into the soil. Wastewater can be approached as a resource to be used, if we take a cyclical approach to managing water and sewage, not a linear one—in Israel, 70% of sewage gets treated an reused for irrigation (and that figure has probably risen since cited in 1996).[22] As Postel points out, "By better matching supplies of varying quality to different uses, more value can be derived from each liter taken from a river, lake, or aquifer—and the economic and environmental costs of developing new freshwater sources can be lessened."[23] We've got so many possible improvements we can make in the field of water management. This is totally something we can do. Consider: "It would take an estimated $36 billion more per year, equal to roughly 4 percent of the world's military expenditures, to bring all of humanity what most of us now take for granted— clean drinking water and a sanitary means of waste disposal."[24]

Of course, you're probably not a farmer or a water policy maker, which still leaves the question: what are you supposed to do? What you can do is be vocal. If everyone who reads this article, or similar articles, changes their lifestyle to accommodate per-

the Nile—and none of the Nile's waters originate within Egypt's boundaries.

• Turkey is the water-rich country in the Middle East, and they know it. As President Demirel, a former water engineer, stated, "The water resources are Turkey's; we have a right to do anything we like. We don't say we share the oil resources that other Arab nations have, and they cannot share our water resources."[14]

• Then, there's Israel, which consumes 82 percent of the West Bank's water.[15] As professor Thomas Naff states, "it is water, in the final analysis, that will determine the future of the Occupied Territories, and by extension, the issue of conflict or peace in the region."[16]

All this leads Postel to declare, "Averting outright water wars in the Middle East will take all the creativity and cooperation countries in this region can muster."[17] The word *shari'a*, which is the term for Islamic law, comes from a word that means "the sharing of water." There is a deep tradition of cooperation and sharing in this region; early laws mandated that whomever dug a well could drink first, but no man or beast could be denied a drink. But demand is high, and exacerbating all these regional tensions is the climate change issue (which is of course entwined with the water and oil issues). As rainfall patterns shift, desertification intensifies; in some places, there is a loss of hydropower, which leads to an even greater dependence on fossil fuels.

CONFLICT = PROFIT

As water becomes perceived as scarce and valuable, corporations are stepping in to take advantage of this scarcity. The World Bank estimated the water market at one trillion dollars, and after the dot-com bubble burst, Fortune magazine named the water business as the most profitable industry for investors.[18]

Globalization financiers and trade agreements developed in the past few decades have encouraged privatization of public resources. NAFTA defines "waters, including natural or artificial waters and aerated waters", as tradable goods. Also, the World Bank and International Monetary Fund, who lend money to developing nations, often impose water privatization as a condition in their lending agreements (with the rationale that because companies are more skilled at managing a water supply that local governments, the area will prosper under privatization).[19] Fortunately, after Cochabamba (see sidebar) rampant privatization is being looked at again—now, privatization contracts sometimes include clauses that limit rate hikes and establish ways to measure corporate performance.

Some people argue that since many corrupt local governments can't get it together and provide clean water to the people, privatization is the only way to supply water to the poor & thirsty. On the other hand, some believe that people shouldn't have

worse, much of these corporate agribusiness practices are federally subsidized by you and me.

Number two is industry, which uses a quarter of our available water. Everything takes water to manufacture, from paper towels to plastic cups. Let's look at a computer: to manufacture a six-inch silicon wafer uses 2,275 gallons of deionized water, 3,200 cubic feet of bulk gases, 22 cubic ft. of hazardous gases, 20 lbs. of chemicals (it's no wonder that out of 29 Superfund sites in Santa Clara County CA, 20 were created by the computer industry).[7] To produce a car requires 50 times its weight in water—a kilo of paper, 700 kilos of water; a ton of steel, 280 tons of water. Everything we use requires water to be made, and as Postel explains, "Especially for those 1 billion of us in the high-consumption class, cutting down on our purchases of material things—from clothes and shoes to paper and appliances—conserves and protects water supplies as effectively as installing a low-flush toilet does." [8]

This brings us to the third main category of water usage: personal use. In a sense, industrial use *is* personal use, since we personally use the products of industry. There is indirect water consumption in the form of the goods we consume—our paper, textiles, cars, etc.; then, there's direct water consumption. This is the stuff that comes easily to mind like drinking, cooking, and showers. My generation was taught in school to turn off the faucet when we brushed our teeth; the next generation may be taught not to flush the toilets unless absolutely necessary. So when you think about your personal use, remember to take into account everything you use—not just how many showers you take a week, but the stuff you buy and the foods you eat. If you choose to eat meat, you're using a lot of water: 38% of the global grain harvest becomes feed for livestock, and a kilogram of hamburger or steak produced by a typical California beef cattle operation uses 20,500 liters of water."[9]

Of course, it may seem like a terrible burden to always be thinking about how much water goes into your hamburger. (Can't I just enjoy my lunch?) You may decide: I'll try to buy less stuff and dry my hands on my pants instead of using paper towels and take shorter showers (unless it's really hot outside)—et cetera. This is a wonderful beginning-place—it's how awareness changes, day by day, in a collection of moments However, there's much more than just a change in personal habits for us to undertake—stay with me here, and I'll explain what else you should know regarding water and the future of civilization, and why we should think about it even when it might seem like a burden at first.

As citizens in a dominant country, we're kind of responsible for what our leaders are doing, and how they're spending all our tax dollars, and how they regulate (or don't regulate) corporations. This means we have to think about wars (and

ARAL SEA

Abandoned fishing boats resting on salty plains... ghost towns that used to be fishing villages, yet now lie miles from any shore... toxic dust storms that are visible from space. It looks like a scene from a sci-fi movie, but it used to be the fourth-largest lake on Earth.

"White gold"— that was how Soviet planners thought of cotton. So they decided to irrigate the desert in Uzbekistan and Kazakhstan in order to grow the stuff, which required diverting two rivers.

The result: the Aral Sea has shrunk by sixty percent. This was no accident; if one looks at Soviet maps from the early 1960s, one can see "the planned elimination of an ecosystem nearly the size of Ireland."* The shrinkage began in the 1960s; in 1987, the lake split into two.

The consequences: A fish catch that used to be 44,000 tons per year is down to zero. The water, in some places 2.4 times saltier than the ocean, is undrinkable; typhoid has risen 30-fold. Worse than this is the dust. "Each year, winds pick up at least 40 million tons of a toxic dust-salt mixture from the dry seabed, and dump them on surrounding croplands."** The people that still dwell here have esophageal cancer at a rate of 15 times the Soviet average. They still grow cotton here: it is their source of income in this depleted land. Some scientists say, though, that by 2015, the sea could vanish completely.

* Postel, 60. ** Ibid, 61.

how to avoid them) and who controls the world's water, and at what cost. As Ismail Serageldin, the vice-president of the World Bank, said in 1995, "If the wars of this century were fought over oil, the wars of the next century will be fought over water." The 21st century is shaping up to be an era of water (and oil) conflicts, as nations and corporations struggle for control of our planet's most crucial resources. How much these governments and corporations get away with depends on how vocal, insistent, and informed the public is, at least to some extent. (I'm not saying that the U.S. is an ideal democracy by any means, but it's better than a lot of governments in that regard, and if we accept the premise that public opinion means nothing, we might as well give up now.) So, it's our responsibility to know what's going on in the world with regard to water, and speak up about it.

What's going on? Basically, there's a lot of efforts to privatize public water works, and a lot of escalating tensions in high-demand areas. You can view this as the supply-and-demand issue, where groups act as competitors for a scarce resource. But there's also a culture clash here, as Vandana Shiva characterizes it—a clash between "a culture that sees water as sacred and treats its provision as a duty for the preservation of life and another that sees water as a commodity, and its ownership and trade as fundamental corporate rights."[10] We've got a not-yet-obsolete paradigm where water is something that can be bought and sold, and another paradigm where water is a cherished, life-giving fluid that we can't take for granted. The second paradigm is both ingrained in our distant past, and the way of the future (once we get through a potentially messy paradigm shift). These potentially messy growing pains are what we'll talk about next.

SCARCITY = WAR?

"The fight over water, at its least complicated, is actually being waged to determine who will have enough water tomorrow and who will go thirsty ... The nations capable of delivering at least the minimum required amounts of water to their citizens will be the dominant survivors; they will influence and control countries that can't."[11]

In many places throughout the globe, the water wars are already here, although they might be clothed in other tensions. "It is always possible to color water conflicts in such regions as conflicts amongst regions, religions, and ethnicities," as Shiva points out.[12] It's not hard to see where these conflicts could occur—just look at a map. Consider: "Nearly 40 percent of the world's people live in river basins shared by more than two countries. India and Bangladesh haggle over the Ganges river, Mexico and the US over the Colorado, Czech and Hungary over the Danube, and Thailand and Vietnam over the Mekong."[13]

the Middle East & its nations

- In Egypt, 56 million people depend on

LA GUERRA DEL AGUA

When anti-globalization activists want to point out a hopeful story, they often point to what happend in Cochabamba, Bolivia. In the late 1990s, this city of about 500,000 had a corrupt and corroded water system. Rusty pipes leaked away over half the water, and as many as 40% of residents didn't have clean water access at all. So when the Bolivian government sold the water system to Aguas del Tunari, a consortium including a subsidiary of U.S. multinational Bechtel, many residents were happy— at first. The deal, which had transpired under pressure from the World Bank, seemed like a potential way out of the water woes. But within six months, prices for water had risen 200-300%. A family's water bill often reached 20$ a month— in a country where minimum wage is 66$ a month.

With a growing attitude that "dirty water is better than water we can't afford," the people held general strikes. Marches became street battles, and by April of 2000, the government had declared martial law. People who broke curfew could be shot on sight, and people began disappearing in late-night sweeps. Oscar Olivera, the leader of the protest coalition La Coordinadora, explained the situation like this: "The only thing we had left, the only thing that was still ours, was water and air. Then they took the water away, too. We couldn't let that happen ... We understand that water is a shared right, and that right is not for sale."[25] When Victor Hugo Daza, an unarmed 17-year-old, was shot in the face by a Bolivian soldier on April 8th, the crisis reached a turning point. The government canceled the deal with Bechtel. It was a remarkable stand against globalization and profiteering— but some still called a "hollow victory", since the quality of water in Cochabamba remains poor.[26] On the other hand, this oft-cited victory stands as a rare example of people rebelling against corporate control of resources, and may pave the way for other victories.