

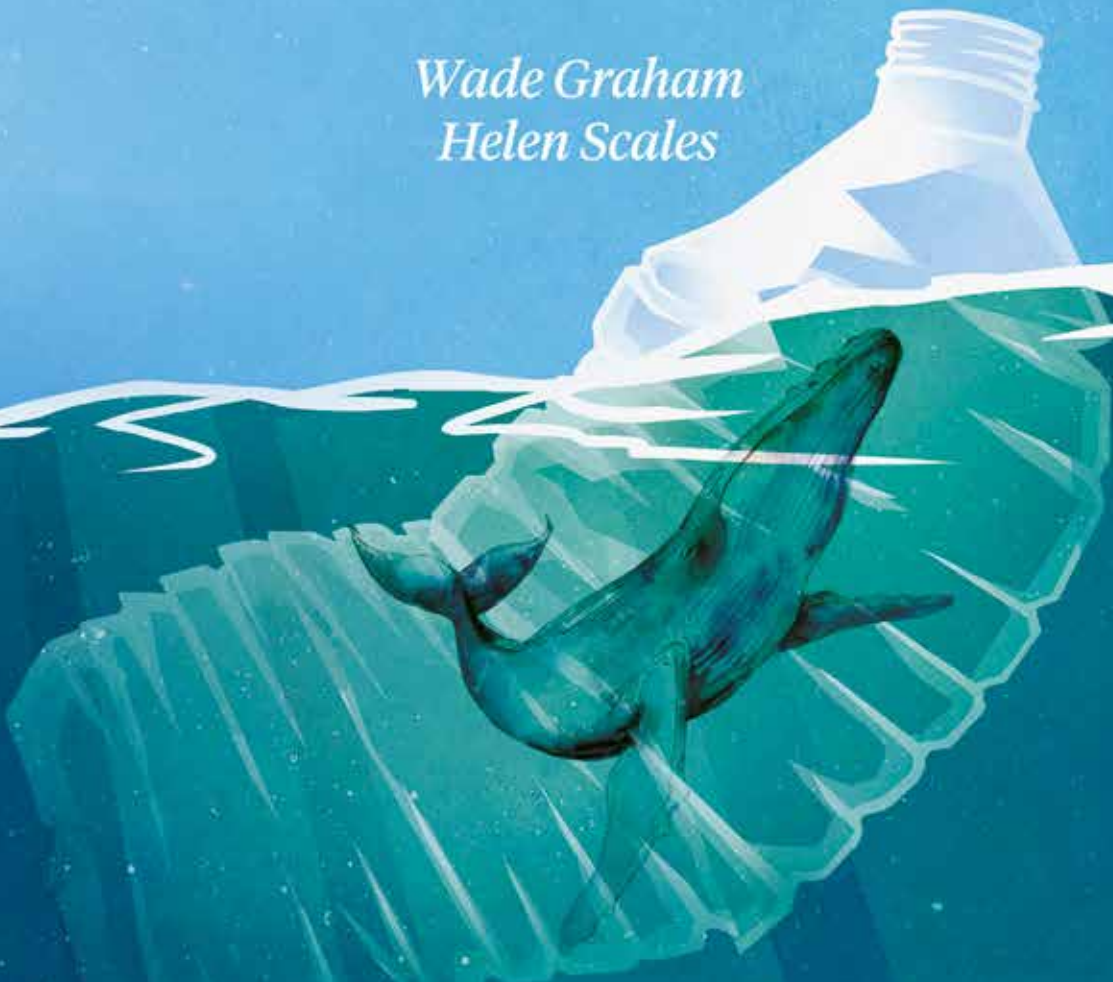
# Perspective

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July 2021 | £5.99 | [perspectivemag.co.uk](http://perspectivemag.co.uk)

## Paying the price for water

*Wade Graham  
Helen Scales*



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# Paying the price for water

If we truly value water we must account  
for the real cost of using it, argues *Wade Graham*

Unless you're a statistical freak, you love water. Being near it, looking at it, being immersed in it. Many of your favourite places are near water. Where you want to go on holiday. Where you want to build your dream dwelling when you've won the lottery or retired. Where you proposed, or were married, or retreated to for a month when you were divorced. Like the best sunsets, your daydreams and memories flock to it like hummingbirds to sugar-water.

We all love water. It is a cultural fixation: our lyrics, paintings, novels, and selfies prefer a water backdrop. We build around it: not just the Riviera, the Costa del Sol, Capri, Cancun, and Honolulu, but New York, Hong Kong, San Francisco, Sydney, Lagos, and Mumbai. Our attraction is not just to the sea; we cluster around rivers, lakes, and, let's not forget, snow. Can you think of a resort that is not near water? Proximity to water is a universal index of happiness. A British study has shown that living by the coast has measurable health benefits – not due to greater activity, but to something more vague that the authors call “quiet fascination”. Perhaps it's because, as we are all told, we are made of water: nearly 80 per cent when we're born; 50-60 per cent when adults. Some scientists argue that because we have features shared with aquatic creatures – such as a lowered larynx, subcutaneous fat, sweating, and a “mammalian dive reflex” of slowed metabolism in water, just

like whales – we evolved more in watery environments than on the arid savannah.

I love water. I grew up on the California coast, where it is a cult: a surfboard on every car, dive fins in every boot. Most days were spent learning the rhythms of the ocean – learning to swim, to hold breath, to paddle into a wave, to “eat it” and be held under; to rig a boat, trim a sail; to dive, maybe bring back lobsters, sea urchins, and abalone – when there still were abalone. There were also boats

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in every garage and driveway, made for every kind of water: kayaks, sloops, dinghies, skiffs, rafts. And, for true adepts, wooden river dories for riding the rapids that tumble out of the Sierra and the Rockies every spring and summer. The rivers' names are indelible to me: the Yellowstone, the Colorado, the Rogue, the Snake, the Stanislaus, the San Juan – wild whitewater coursing down canyons from the forested mountain headwaters to the deserts. Many of my fondest memories are of floating and fishing those streams and

swimming with trout in clear pools. The journeys have become family tradition, passed on to my kids; and, I hope, passed on in turn to theirs.

But my love for these waters isn't saving them. The stretches of river we run are just the dregs left after more than a hundred years of uninterrupted assaults – our rivers have been systematically dammed, diverted, depleted, polluted, and poisoned, their ecosystems and iconic species degraded or destroyed. In the continental US only a meagre handful of remote rivers still run free to the ocean. Now, what remains of the rivers of the American West are diminishing, gripped by seemingly endless drought. Seasons are shortening, with flows often too low to float. Many years, diminished snowpacks evaporate before running off; enormous reservoirs are shrinking to mudflats; fish and all the other water creatures depend on are in trouble. On the canyon walls, the forests are increasingly brown with dry, dead trees. Fire consumes more and more, year by year. Already, hundreds of thousands of acres of forest have been lost, replaced not by trees but by even more flammable brush and grass. Scientists call it vegetation “type change” and it is just getting started.

The ocean I know, already choking on plastic and sewage, invasive species and sonic pollution, has gone haywire: marine heatwaves upend food chains and migrations, diseases washed down from our cities infect marine animals. Off ▶

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California, years of overfishing combined with recent over-warm waters and diseases striking down sea otters, starfish, fish and other predators of the sea urchins which eat algae, have seen kelp forests decimated – and with them entire near-shore ecosystems dependent on them. The shoals of anchovies and sardines that sustain larger animals have become erratic. Starving seal and sea lion pups now wash up regularly on urban beaches. Whales do, too, dead of starvation or hit by ships, or their eardrums blown out by underwater blasting by the military, or the oil companies. In summer, algal blooms called red tides increasingly spread along the coast, turning the water into a murky, dark soup. At night, the waves glow with electric blue flashes made by the tiny algae when agitated. This fleeting beauty doesn't compensate for the loss of a healthy ocean. In Hawaii, where my family has lived on and off since the 1950s, our favourite coral reefs are disappearing: bleached by heat, choked with sediment eroded by development and grazing, invaded by foreign organisms. When we dive, we hear the voices of humpback whales nearby. But how will this changing world treat them? My kids ask me: will anything be left for their kids?

The same things are of course happening everywhere. Few places on the planet are spared now; none will be. The same toxic gifts we humans lavish on the waters that sustain us affect freshwater as well as salt: pollution, overfishing, invasion, disease, plastic waste, chemicals, hormones, and noise. All are the results of old-fashioned, garden-variety human avarice, rapacity, corruption, ignorance, and cruelty; the cumulative effect of decades', even centuries' worth of violence against nature. Yet, in these times, they are being layered onto and amplified by the ultimate multiplier of our bad behaviour: global warming, euphemised as "climate change".

Global warming starts with air pollution, but it doesn't stop there. Air is not a molecule but a soup, a mixture, a flow, an always-changing process we think of as the climate system. What binds

the system together and animates it is a molecule – water – one that is rarely, in nature, found alone, but always in solution with everything else. The phrase "the ultimate solvent" takes on new meaning. We tend to talk about the climate as residing in the atmosphere, but the climate is made up of atmosphere and ocean, freshwater and ice, land and living things, all of it driven by water. Global warming's large-scale manifestations – intensifying storms, drought and its flipside, flooding, melting ice, heatwaves, ocean heatwaves, sea level rise, eroding coastlines, acidification, and so on – are all water effects. While we have primarily looked to limits on air pollution (thus far mostly in vain), these facts suggest that water is where we need to focus.

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Clearly, the cultural, political, and economic systems we have devised for our own needs are programmed to destroy the natural systems that underpin our survival. What can be done to reset them? Just as clearly, they are untethered from basic understandings of human connection to, and dependence on, the earth and its processes – not only scientific but ethical. Prior to the modern era, all cultures had some degree of foundational knowledge of, and respect for, the web of life and our tenuous place in it. Many also perceived a divine immanence in nature, making the non-human world deserving of reverence and protection.

Even the Judaeo-Christian tradition, monotheistic and denying immanence in things and creatures, made clear that humans don't own Earth, that we are caretakers only, tending Creation on behalf of something larger and harder

to fully comprehend. Since I took up an adjunct professor role on the Christian Pepperdine campus in Malibu more than a decade ago, I've taken a closer interest in what the Bible has to say on tending to the planet, drawing on what my paternal grandfather, a Presbyterian minister from Tennessee, instilled in me (though my most vivid memory of him involves him chasing me under a table for renouncing God, aged five). It has much to say, like this passage from Leviticus (25:23-24): "The land is mine and you are but aliens and my tenants. Throughout the country that you hold as a possession, you must provide for the redemption of the land." You must, Yahweh says. Both the Left and the Right in America like to talk about rights, but the Bible is primarily interested in responsibilities, and it is exceedingly clear, even threatening: "As for you, my flock... Is it not enough for you to feed on good pasture? Must you also trample the rest of your pasture with your feet? Is it not enough for you to drink clear water? Must you also muddy the rest with your feet?" (Ezekiel 34:17-18.)

Can we reinstate a spiritual dimension to our relationship to water? For secular societies, the spiritual relationship with water has little to do with the concept of God. If we're going to appeal to a higher authority to protect the Earth and its waters, we have to turn to the law. One recent legal innovation would seem to offer hope: giving legal personhood to nature, just as we do with individuals and, in the US at least, to corporations. In 2017 a state court in India granted legal personality to individual rivers in three countries: the Whanganui in New Zealand, the Atrato in Colombia, the Ganga and Yaruna in India. The laws give each river legal standing, so that its interest can be represented by communities and individuals in court. Does this signal a return to pre-modern wisdom? Possibly – the conceptions are rooted in understandings of rivers as processes as much as places, greater than the sum of their parts, in ways that are hard to reduce to numbers. Does it anthropomorphise nature? Yes, but also connects our legal

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systems to natural ones, recognising them not only as legitimate but also as holistic, complex systems that we depend upon, not just as commodities that can be extracted from nature.

But there are obvious questions. These are just four protected rivers. The globe contains tens of thousands of named rivers, and millions of smaller streams. Does each need its own legal personality to be protected by law? And, in the real world, how will these laws likely fare? What country, what court, what judges, lawyers, and juries will decide? All influence law's actual application far more than the language used to write it. Even if ill intent, corruption, and malfeasance could somehow be avoided in the courtroom, what exactly is a river's interest? Who or what determines it? What is "the river" anyway? Where does it begin and end? Are its tributaries included? If so, all, even the smallest or most ephemeral? The glaciers and snowfields that feed it? The underground aquifers that connect to it? Its native species only, or those introduced? Its commercial fishers, or recreational or subsistence ones? Its hydropower users or irrigators? The tangles are infinite.

Law, it turns out, has a troubled track record when it comes to protecting water, which is not a thing, but a flow, a process, infinitely mixed with others, at all levels of the physical and the cultural, and impossible to disengage from them.

A couple of recent examples from my home state are unfortunately apropos. California has among the strongest protective environmental statutes in the US, many of which predate the federal statutes that reinforce and backstop them, including its own Coastal Act, Endangered Species Act, Clean Water Act, Wild and Scenic Rivers Act, and multiple clean air laws. Together with the federal statutes and the similarly doubled state and federal science and enforcement agencies that administer them, they make up possibly the most powerful legal environmental protection apparatus on the planet. And yet none of it has helped, beyond the margins, to stem the catastrophic decline of California's waters.

The Colorado River flows through seven American states, including the far eastern edge of California, and two Mexican ones, draining one twelfth of the US, including most of its deserts, into Mexico's Sea of Cortez. It is said to be crucial to the lives of 40 million people and to a good chunk of the nation's economy. There are many claims to it: from states, cities, farmers, Indian tribes, industries, and interest groups, including powerful environmental advocates. It is the most dammed, channelled, and engineered river on Earth, with scores of truly large dams, scores more only somewhat smaller ones, and thousands of miles of aqueducts and canals. It is also the most intensively managed and regulated, enveloped in layers of bureaucratic administration

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governed by science and by law. The Law of the River, the stack of documents that governs the Colorado River system, literally reaches from floor to ceiling. It has not saved the river from being the most litigated in the world (quite the opposite, probably); nor from being the most dysfunctional. The river is diverted multiple times outside its own natural basin, pumped uphill, through tunnels and aqueducts, dropped through turbines, and transformed for much of its length into a chain of slack, nearly lifeless reservoirs which function as giant evaporation tanks, burning off a tenth of the river's flow every year under the desert sun. So little remains that the river hasn't reached its outlet to the sea more than a couple of times in nearly 60 years, reducing what was once a million-acre wetland at its delta to barren sand. Its spectacularly unique biodiversity is hurtling to extinction. All of this, so that 85 per cent of its water can be poured on

desert farmlands, evaporating to leave a legacy of salt- and chemical-poisoned badlands that taxpayers must somehow "fix". Half of that vast flow is used to grow alfalfa (cattle feed), a crop of so little value that quantities are shipped to China, (in what would otherwise be empty returning shipping containers previously filled with electronics, sneakers, and toys), to feed that country's growing taste for beef.

Now, as the American Southwest dries and heats, thin snowpacks stained with blown dust evaporate early, runoff and reservoir levels yearly probe new historic lows, and region-wide anxiety spikes as the entire Colorado River system enters free-fall, threatening, we are warned, the economy and wellbeing of tens of millions. Stakeholders wrangle in endless emergency meetings to find a solution. And yet the simplest, largest, most obvious solution – stopping growing cattle feed for China in the California desert – isn't on the table. The largest single water apportionment on the river, roughly ten times what Los Angeles, the second-largest city in the US, uses in a year, goes to just 400 farmers in the hottest desert in the country. But their water "right" is legally senior to that of the other 39,999,600 people who rely on it, and so is considered untouchable.

One more example. California's 400-mile-long Central Valley was once a gigantic seasonal wetland teeming with waterfowl, grizzly bears, elk, and a kaleidoscopic diversity of unique salmon and trout, forming the third-largest historic salmon run in the continental US. Over the course of a century and a half it was transformed by taxpayer-funded dams and aqueducts into the largest farm economy in the world, dominated by huge "growers" – not farmers in any traditional, recognisable sense, but immense, wealthy, and politically powerful corporations relying on poorly-paid migrant labour. With water provided below cost, courtesy of massive taxpayer subsidies, the growers' thirst has no limit, and nature is now, predictably, on the ropes. 95 per cent of the state's wetlands and aquatic systems are gone; the remainder are in steep decline. Just ►

one per cent of the vast salmon runs are left, teetering on life-support through expensive hatcheries and last-ditch environmental laws constraining water diversions. Nevertheless, this summer, in the face of continued drought, California's "progressive" governor, through his appointed water authority, has chosen to set the laws aside in order to funnel water to a few hundred growers – because setting aside their water "rights" in favour of the survival of irreplaceable species would mean political difficulty. If nothing changes and no court steps in to enforce the laws that protect them, California's last salmon will most likely go extinct. My kids may never see, much less catch and eat, one of these magnificent fish, as I have had the good fortune to do.

The grim lesson is: not only have our vaunted "bedrock" environmental laws failed miserably to slow the path to destruction, all of this legal apparatus is effectively frozen in place, unable to move beyond property rights. US law is built around the defence of "rights" – first and foremost to hold property (including, when the Constitution was written, human chattels), and to religious pluralism and an independent press, but also to wield guns, to discriminate, to slander, to be bigoted, and to disenfranchise. This is not to say that law isn't improvable or even perfectible. There has been a slow march of progress, lending some hope that, as Dr Martin Luther King, Jr assured us, the arc of history bends towards justice. But it has been excruciatingly slow and won at great cost, always pitted against the inertia of other "bedrock" laws designed to shield entrenched interests from change. Given enough time, maybe we'll get there. But we don't have any more time.

What then – now – can be done?

First, reject the sleight-of-hand that allows water to be labelled a commodity. A commodity is something that can be owned, separated, divided into units, assigned ownership, traded, moved from place to place. A synonym is a chattel: "an item of moveable property; an enslaved person". Property thus defined is necessary for the efficient workings of markets, at

least as market ideologists imagine them. Water can be separated from its source or stream, bottled, labelled, shipped around the world, sold, bought, and consumed. In the process it can be depleted, consumed, polluted, and degraded. But it can't actually be separated. Water, like matter, isn't destroyed, it is just changed – for the worse. You may be able to put it in a bottle and think that you've bottled it, but you haven't. You've only interfered with the planet's balance.

Second, recall that the most senior right to water is ours. The public trust doctrine, codified by the Roman Emperor Justinian in 535 CE, affirms the people's fundamental right in common resources,

*"By the law of nature these things are common to mankind—the air, running water, the sea, and consequently the shores of the sea." These rights were reiterated in Magna Carta and passed on in English Common Law*

beginning but not ending with the sea and the rivers: "By the law of nature these things are common to mankind – the air, running water, the sea, and consequently the shores of the sea." These rights were reiterated in Magna Carta and passed on in English Common Law, which forms the foundation of American law. Under it, every river already has legal standing.

Third, bring the sharpest knife our culture has to the fight: money. To start with, charge users full freight. End subsidies, and factor in the true costs of water use: pollution, degraded fisheries and ecosystems, and so on – what economists call "negative externalities" – compounded into the future. To say nothing of the aggregate planetary life support functions that water lubricates, what economists call "ecosystem services", such as insect pollination, oxygen from plants, the cleaning of water by wetlands, the productivity of the oceans, and yes, a stable climate, which total US\$125 trillion a year, twice the annual value of the entire

world's economy (and this value, calculated in 2011, is 1/4 less than it was in 1997, due to human-caused damage in the interim). The campaign slogan "*Bien commun de l'humanité, l'eau n'a pas de prix*" is well-intentioned but false. Water may be invaluable, but in the real world it needs a price. What is unpriced is undervalued, and will be abused. It is the classic Tragedy of the Commons, where grazers will theoretically overgraze the commons if not constrained by the community. It is the definition of polluting the common atmosphere by burning fossil fuels. In the American West, where water is mythically said to be the most precious thing (as in the apocryphal Mark Twain quote, "Whisky is for drinkin', water is for fightin'"), water is actually the cheapest commodity available, totally divorced from its true cost. As a result, its use is wildly uneconomical: agriculture uses 80 per cent of California's "precious" water but contributes just 2 per cent of its annual GDP.

Economists call negative externalities and mispricing "market failures". And they prescribe correcting the price to bring demand back into a rational relationship with supply. Such is the logic behind putting a price on carbon – pricing in the bads, pushing the economy towards leaving the carbon in the ground. The same should be applied to water: a global price on severing water from its flows, designed to keep the water in the river, keep the river healthy, clean, and alive, until it reaches the ocean, and treat the ocean the same way. It would be a fair deal. And it just might keep us from paying the ultimate price for our bad behaviour – what Texans call "pissing down your neighbour's well" – because our neighbour's well is our own.

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