SPECIAL ISSUE

Volume 29 • Issue 2 • Summer 2011

PERC REPORTS

FOR FREE MARKET ENVIRONMENTALISM

THE TOUGH QUESTIONS FOR FREE MARKET ENVIRONMENTALISM

PERC

The Property and Environment Research Center is a nonprofit institute dedicated to improving environmental quality through property rights and markets.

PERC REPORTS
For Free Market Environmentalism
Summer 2011
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The foundation of PERC has always been high-quality academic research rooted in the principles of property rights and markets. It was this focus on research that led to Terry Anderson and Donald Leal's influential 1990 book *Free Market Environmentalism*—the first comprehensive argument for "rethinking the way we think" about the environment.

With the third edition of the book forthcoming, PERC recently held a workshop to tackle the hard questions for free market environmentalism. This workshop paired long-time PERC scholars with younger scholars who came to ask the tough questions. As one might imagine, this pairing led to heated debate at times, but overall it enhanced the experience around the conference table. This special issue highlights some of the papers presented.

PERC welcomes open and informed discussion, and the pages in this issue serve as such a forum. The articles are more academic in tone than our typical pieces—think full-bodied Bordeaux rather than Pinot Noir—but we found them enlightening and hope you do as well.

SPENCER BANZHAF suggests that cap-and-trade is "*the* free market based approach to complex multilateral problems like climate change." Free market environmentalists, he argues, should applaud this approach over more costly government regulation while working to push free market ideals further into policy.

Free market environmentalists do not usually look to government as part of the solution to environmental problems. But when they do, governance by the smallest entity possible is the preferred choice. SARAH ANDERSON challenges this claim by asking, is smaller always better?

CHARLES KOLSTAD goes broad to explore both "The Promise and Problems of Free Market Environmentalism." Free market environmentalism has a lot to offer for problems pertaining to natural resource allocation, but according to Kolstad, "the case for FME is weaker when dealing with environmental goods, such as providing clean air."

JONATHAN ADLER dives deeper into the pollution problem by evaluating the common law as a free market solution. He suggests that it is time for free market environmentalists to reconsider what made the common law attractive in the first place, and develop new ideas to "resolve pollution problems while respecting property rights and facilitating market exchange."

To stir up a little more controversy in the pages of *PERC Reports*, we've included JAMIE WORKMAN'S "Impressions" of the wolf saga. Could the political conflict over wolf recovery efforts be resolved via economics? Let the bidding begin.

Also be sure to read G. TRACY MEHAN's review of Marc Reisner's book *Cadillac Desert: The American West and Its Disappearing Water*, published 25 years ago. This is a classic of American conservation literature and is still illuminating important lessons in the political economy of limited resources.

Tell me what YOU think
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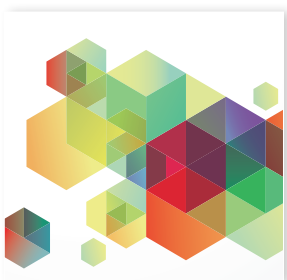
Laura E. Huggins

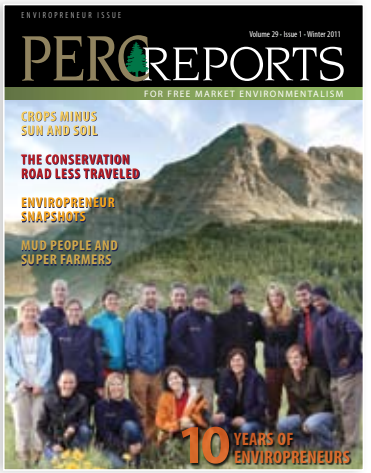
Laura E. Huggins | EDITOR

FEATURES

COLUMNS

PERSPECTIVES





DEEPLY HELD MISTRUST OF PROPERTY RIGHTS IN AFRICA

I just read Gregg Zachary's most interesting article in PERC Reports *(Winter 2011) about property rights in Uganda. I've been based here in Kenya for some 45 years and now research mainly economic impacts of property rights.*

What never ceases to amaze me is the deeply held mistrust of secure, private property rights throughout Africa by African academics and politicians, to the extent that you read claims that private property rights are "inappropriate" for Africans.

Here in Kenya there is a strong move to undermine the value of all property rights. In the new constitution, for example, all pastoral property rights are to be confiscated, with no compensation, and transferred to a non-accountable, politically appointed National Land Bureau. When you cut through all the political hype, the reason for this move is that there are hopes of finding oil and gas in the pastoral lands to which the elite want easy access. And the pastoral members of Parliament, far from looking after their constituents' welfare, are fully in favor of the change as they, as members of the elite, will also be able to indulge in takings.

—Mike Norton-Griffiths

A TWISTED TALE

Thank you to Dan Benjamin for his insight into the development of barbed wire fencing—a great invention with so many uses! As he brings attention to in "Barbed Wire Entrepreneurship," the invention and availability of barbed wire fencing played a significant role in the agricultural development of our arid great plains and elsewhere. Please consider addressing this integrally related topic in a future piece: Thomas Jefferson's Yeoman Farmer strategy aka Manifest Destiny and the parcelization of the dryland West. Fence technology, in isolation, is interesting, but looking at it through the lens of agriculture, aridity, ecology and economy is even more interesting and considerably more complex.

—J.C.

IF IT'S NOT BROKE, DON'T FIX IT

In Zachary's article, "Mud People and Super Farmers," Ken and Jessica Sakwa sound like they are straight out of Pearl Buck's The Good Earth. *I hope things end better for them.*

I am not sure that anything is "broken" here that needs to be "fixed." The ownership of land titles opens the door to selling something that can sustain a family in exchange for short-term gain. Even worse, getting into debt using your land as collateral is a very risky proposition.

—Barb Jensen

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IDEAS THAT EMPOWER PEOPLE

Reconciling Economics & Ecology

"In times of change learners inherit the earth; while the learned find themselves beautifully equipped to deal with a world that no longer exists."

—Eric Hoffer

Modern environmentalism and neo-classical economics have more in common than one might think. First, they are linked by a focus on equilibrium models. Many environmentalists view nature undisturbed by humans as tending toward a balanced state, and neo-classical economists view markets tending toward an equilibrium in which demand and supply are balanced by prices. Second, they are linked by a view of how humans interface with the environment and the economy. Environmentalists view humans as a disruptive force that upsets nature's delicate balance, and neo-classical economists view human action to be rife with externalities, meaning people impose costs on the environment and on others for which they are not responsible (for a discussion of why the word externalities has been expunged at PERC, see my "On Target," Spring 2010). Both views are inconsistent with reality.

Fortunately, there is a better way to integrate ecology and economics—a way that builds on the teachings of Nobel laureates Friedrich Hayek and Ronald Coase, which form the foundation of free market environmentalism. Through their teachings, our attention is focused on information, feedback mechanisms, and the dynamic processes of nature and markets.

Hayek's ideas compare with those of Charles Darwin, who saw evolution distinctly as a bottom-up process, as opposed to a top-down one. Matt Ridley, scientist and best-selling author, captured the similarities between Hayek and Darwin, saying that both markets and nature are "spontaneously self-ordered through the actions of individuals, rather than ordained by a monarch or a parliament."

Thought of in this way, nature and the economy are processes in perpetual change rather than equilibrium systems that remain in balance. As biologist Daniel Botkin notes in his book, *Discordant Harmonies*, nature is not a "Kodachrome still-life," but instead "nature is a moving picture show," continually changing in a series of complex patterns.

The same can be said of markets, wherein entrepreneurs are the equivalent of non-human species that fill Darwinian-type niches. The difference is that Darwinian evolution is a process where species evolve randomly, while market systems are purposeful processes wherein human action utilizes condensed information about the value of the environment to human beings.

The focus on human actors stands in stark contrast to the notion that the value of ecosystem services can be derived from physical systems themselves. As philosopher Mark Sagoff, a 2010 PERC Lone Mountain Fellow, notes, ecological economics attempts "to substitute an *in natura* calculation of value for the artifice of market price," thereby ignoring human values and human action. Following Hayek, Professor Sagoff emphasizes that "ecological knowledge… is too spread out among people to be captured by any one individual or by any group of individuals—even given careful planning and sufficient resources." Hence, both nature and markets are inherently decentralized.

Ronald Coase's seminal article on "The Problem of Social Cost" provides the second important link between ecology and economics. Indeed, his article might be re-titled, "The Problem of Environmental Cost." Coase's central point is that property rights force people to consider the costs of using resources. Thus, property rights link human action with nature. Certainly, transaction costs can prevent all costs from being fully accounted for, but unaccounted for costs constitute uncaptured benefits. If water is not owned, and therefore polluted, the entrepreneur who can establish ownership captures the benefits if water quality is improved.

The key to integrating ecology and economics, using Hayek's words, is to bring "about a state of affairs where prices correspond to costs," which is precisely the role that Coase saw for property rights. Where there is an institutional void, institutional entrepreneurs have an opportunity to fill the void and earn a profit, i.e. to do good while doing well. Using the words of the great conservationist, Aldo Leopold, humans are capable of "thinking like a mountain" if they have signals that convey information about interconnections between themselves and the mountain. Property rights reward "thinking like a mountain" by rewarding human action that improves man's use of the mountain and imposes costs for actions that do not.

Critics of free market environmentalism typically contend that transaction costs prevent property rights from evolving, and, therefore, call for political action. To be sure, government may be able to improve the connection between nature and humans, but there is ample evidence from the field of public choice that government failure is at least as likely to harm the environment as market failure.

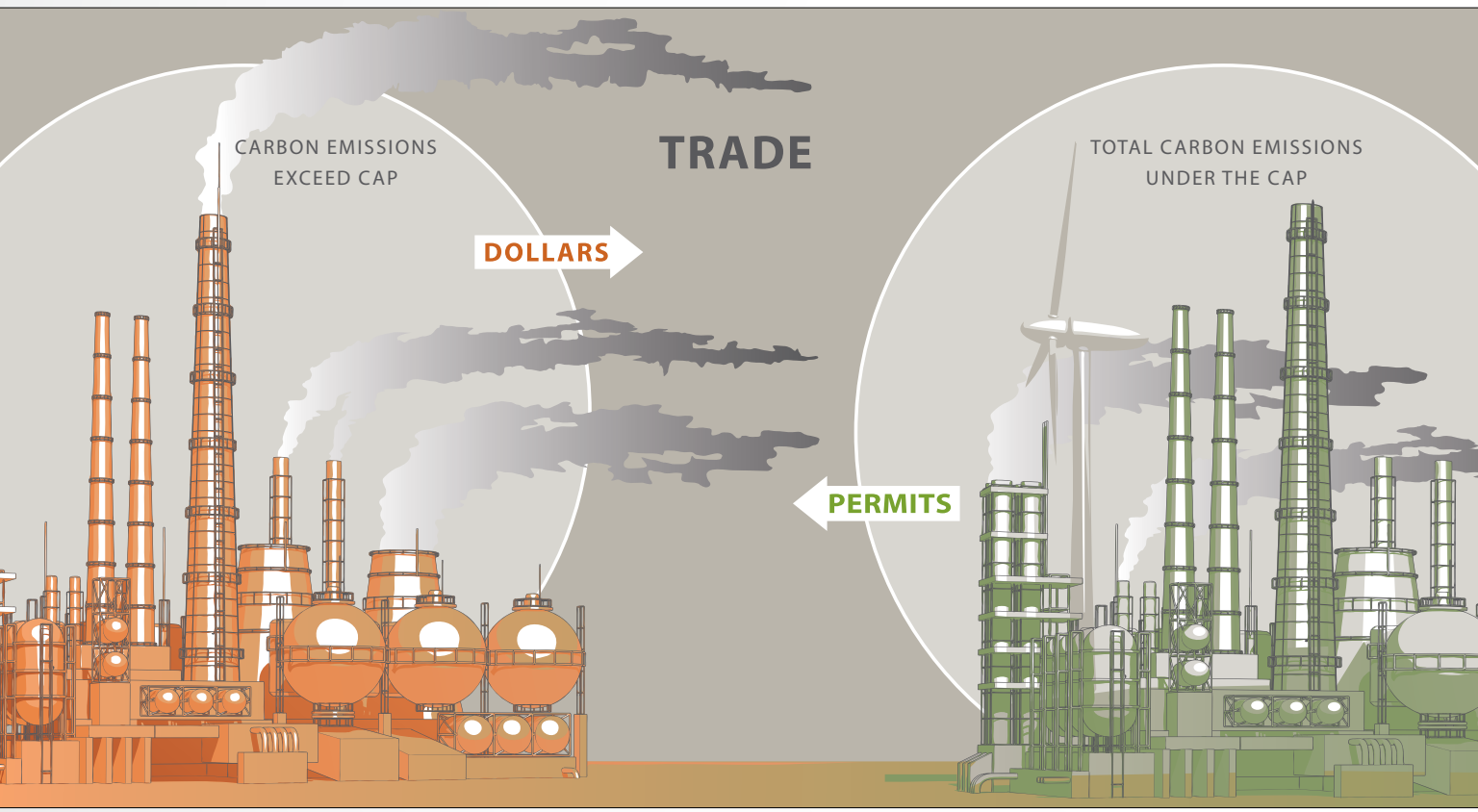
Neither Hayekian nor Coasean lenses are rose-colored in that they do not tell us how to achieve economic or environmental nirvana. They do, however, show how prices, property rights, and entrepreneurs can better link human action and nature. Environmentalists who dare to don these lenses are likely to find that economics is a better friend of the environment than they think.

In "On Target," PERC's executive director Terry L. Anderson confronts issues surrounding free market environmentalism. He can be reached at perc@perc.org.

The case for cap-and-trade

BY SPENCER BANZHAF

THE CAP: A limit on the total carbon emissions for the country. Shares are allocated to companies in the form of emissions permits.



THE TRADE: The sale of unused permits by a company that can inexpensively reduce its emissions to a company that has higher emission reduction costs or that wants to increase its emissions.

Although "cap-and-trade" legislation in Washington is dormant for the time being, the issue of climate change has not gone away. Carbon emissions continue to accumulate in the atmosphere, and the U.S. Environmental Protection Agency continues to move along a road of costly regulation.

In the upside-down world of politics, most free market proponents seem to have celebrated the temporary defeat of cap-and-trade as a victory over heavy-handed government regulation. If so, they have it backwards. Cap-and-trade is *the* free market based approach to complex multilateral problems like climate change. Free market environmentalists should applaud this approach over more costly government regulation, while working to make an eventual climate bill adhere tightly to free market ideals.

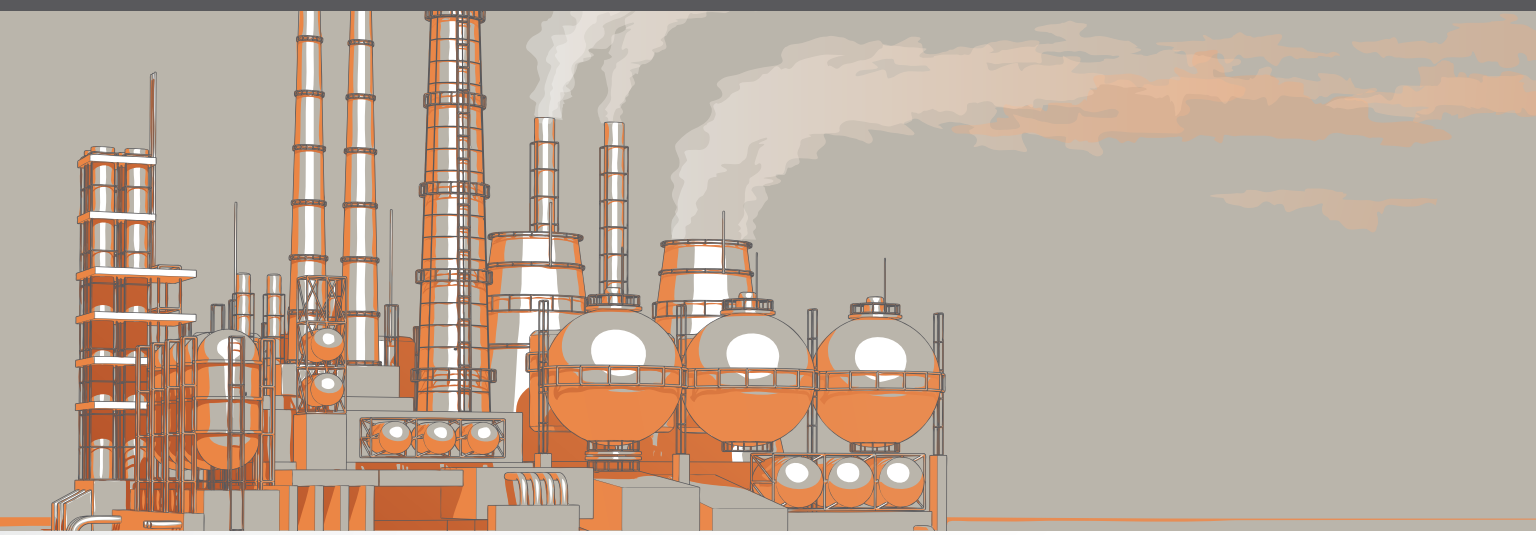
It is clear that free market environmentalists—as environmentalists—love the environment. Of course, caring about the environment does not oblige us to jump at every hysterical claim that the sky is falling. Conservatives and libertarians alike do well to be skeptical of "experts" who claim that the crisis du jour requires radical social change. But while free market environmentalists have a posture of healthy skepticism, they do not have a theory of atmospheric physics. To say "I believe in limited government, therefore I do not believe in anthropogenic climate change" is a non-sequitur. To the contrary, free market environmentalism must look problems like global climate change in the eye, and offer free market solutions.

MARKET-BASED ENVIRONMENTALISM

Reducing excessive pollution is a legitimate purpose of government, but the guiding principle should be to do so in the least obtrusive, least heavy-handed way possible. The first generation of federal environmental policies, passed in the 1970s, ignored this principle. These command-and-control policies have injected the government unnecessarily into countless manufacturing and commercial decisions, increasing administrative and economic costs while dulling incentives for environmental entrepreneurs.

In contrast to these intrusive regulatory policies, free market economists, like the late Milton Friedman, have long advocated market-based approaches to the environment. Naturally, the starting point of this approach is a deep appreciation for the efficiency of markets. Markets provide incentives for people to work hard and to innovate. More deeply, the invisible hand of the marketplace coordinates the actions of countless individuals by using prices as the signals which convey their local and specialized knowledge—knowledge that no central planner could ever have.

In essence, there are two ways to channel the power of market pricing in favor of the environment. One is to price pollution by charging fees or taxes on emissions. This sets the price, while allowing the market to determine how much to reduce emissions in response. The second is to set a quota on allowable emissions and allow industry to trade pollution rights, creating a market for pollution. This cap-and-trade approach sets the quantity of pollution, while allowing the market to determine the price or value of the right to pollute. This approach was dismissed by beltway bureaucrats as economic nirvana until President George H.W. Bush ushered it into the mainstream by using a similar approach to tackle acid rain.



MARKET-BASED APPROACHES CREATE INCENTIVES FOR ENTREPRENEURS TO DEVISE NEW WAYS TO REDUCE POLLUTION MORE EFFICIENTLY.

Either way, these market-based approaches have three advantages over more intrusive command-and-control regulations. First, they create flexibility in who cuts their pollution. Industrial facilities that find it easy to reduce their emissions can save money by making extra cuts and selling their pollution rights, while those that face steep abatement costs can pollute more. Second, market-based approaches create flexibility in how the cuts are made. Plant managers, who know their own business better than anybody in Washington, are given full freedom to make the cuts however they choose. Finally, market-based approaches create incentives for entrepreneurs to devise new ways to reduce pollution more efficiently.

There is plenty of room for free market environmentalists to debate the relative merits of emissions taxes and cap-and-trade. The two approaches are similar in their flexibility in determining how abatement is achieved, but they differ in how they treat the remaining pollution. A carbon tax could mean more than $100 billion in new tax revenue annually. Proponents of this approach argue that this revenue represents an opportunity to reduce the budget deficit or to lower other taxes, such as the income tax or the capital gains tax.

But it's also possible that those new funds simply would tempt government to find new ways to send money down a rat hole. Provisions in previous climate bills to earmark a portion of revenues to "green jobs" training and energy programs illustrate this tendency. Cap-and-trade is an alternative approach without this temptation. Like any market, cap-and-trade creates incentives through prices, but rhetoric equating it with a tax is either misinformed or misleading. In contrast to taxes, where the price on pollution is a transfer to government, with cap-and-trade, the price is set in a market, so the pollution price represents exchanges within the private sector. If cap-and-trade is a tax, then all market purchases are taxes.

ENVIRONMENTALISTS WOULD HAVE THE OPPORTUNITY TO PURCHASE POLLUTION RIGHTS AND RETIRE THEM.

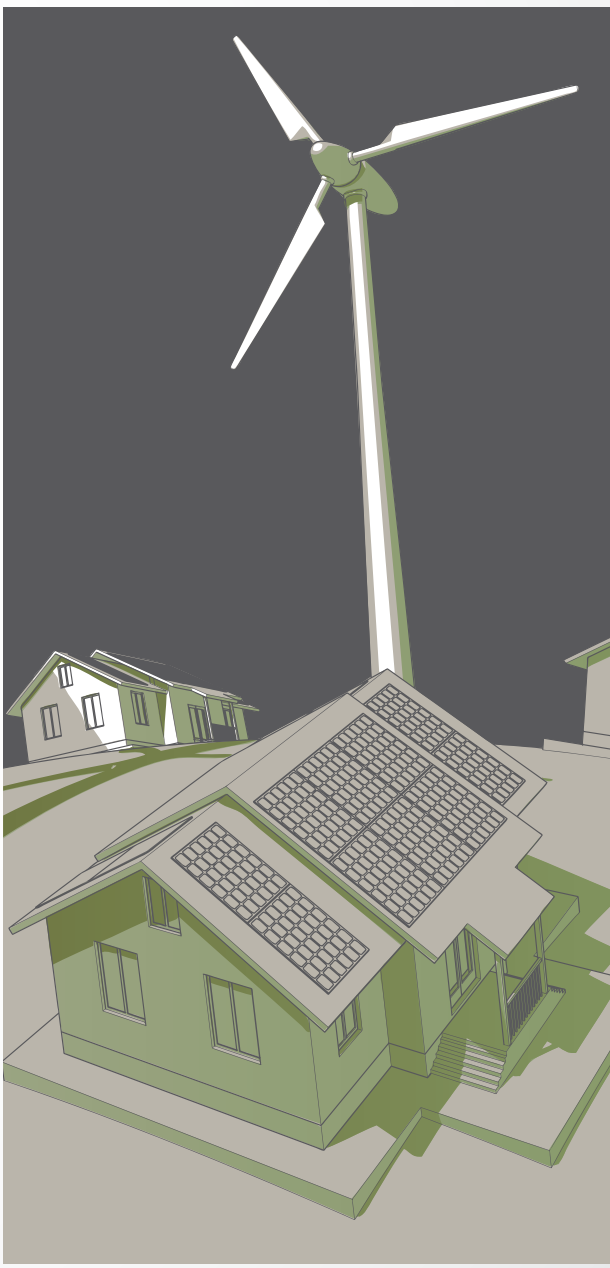
PROPERTY RIGHTS FOR THE ENVIRONMENT

There is another reason to like the cap-and-trade approach: It unleashes the full power of property rights. One of the pioneers of the property rights approach to the environment was economist and Nobel laureate Ronald Coase. Coase's insight was that one reason markets in pollution do not evolve organically is that the rights to the environment are poorly defined. Nobody will buy a right from you if they are not convinced you have it to sell.

Coase argued that if rights are well defined and if transactions costs are low, markets will efficiently allocate resources—including the environment. He not only envisioned trade among polluters, but also between polluters and conservationists. If conservationists hold the right to the environment, they could sell it to polluters. If polluters hold the right to pollute, conservationists could buy it from them, and refrain from exercising it. Whoever has the higher value for the resource will end up with the rights.

Cap-and-trade is based on this property rights approach, as Coase himself has noted. By setting up a trading system, it lowers the costs of transactions, which can occur at a commodities exchange. Under the cap, allowable emissions are allocated to industry as tradable property. Emissions reductions represent property claimed by the government for the public interest.

As Coase argued, the environment is a scarce resource, with its use as a sink for disposing of carbon and other wastes competing with its use in maintaining ecosystem services. The problem with the status quo is that it ignores this scarcity and treats the atmosphere like a free good. The "cap" in cap-and-trade establishes limits on its overuse by defining the extent of rights to dispose of wastes. The "trade" in cap-and-trade allows those rights to be priced like any other natural resource or scarce input, with the price going up and down as participants discover their needs and react to new conditions.



A CAP-AND-TRADE BILL THAT FREE MARKET ENVIRONMENTALISTS CAN SUPPORT SHOULD RELY ON THE MARKET TO MAKE DECISIONS ABOUT HOW AND WHERE TO REDUCE POLLUTION.

Additionally, compared to other approaches, cap-and-trade represents a more gradual realignment of property rights. Taxing pollution can be viewed as equivalent to the government first appropriating all rights to the environment and then selling them back at a fixed price. With cap-and-trade, a large portion—perhaps even most—of the rights would remain with industries that have the precedent of using them historically.

In fact, consider a non-binding cap. Suppose, for example, that CO_2 emissions in the United States are reliably about six billion tons per year. Then suppose that the government establishes a cap-and-trade system with a cap of six billion tons. This may appear to be about as futile as a labor law requiring a holiday on every sixth Sunday of the month. But to the contrary it would have done two important things: establish the rights to the environment and facilitate trading. From that point on, environmentalists would have the opportunity to purchase pollution rights and retire them. This is precisely what the Nature Conservancy and countless local land trusts do now with rights to land ownership. Defining property rights in this way is a fitting role for even the most limited government.

IMPROVING CAP-AND-TRADE

None of this is to say that free market environmentalists should support the actual cap-and-trade bills in Washington. But if those bills are to be rejected, it should be for straying too far from cap-and-trade principles, rather than for following them.

A cap-and-trade bill that free market environmentalists can support should do three things. First, it should truly rely on the market to make decisions about how and where to reduce pollution. The Waxman–Markey bill that passed the House of Representatives in 2009 fails this test. That bill would further inject the federal

government into building codes, lighting standards, and automobile technologies. Most troubling, it would include burdensome requirements that 20 percent of electricity come from renewable energy by 2020. This standard will be impossible to meet in some states and undermines the whole point of cap-and-trade. If the objective is to limit carbon, the federal government need not decide how to do it. That is exactly what markets do well and what governments do abominably.

Second, a cap-and-trade bill should provide maximal flexibility with respect to the timing of reductions, with industry allowed to bank their permits for future use. Often overlooked, banking allows firms to time pollution-reduction investments efficiently, with additional benefits for the environment.

Finally, a climate bill should adhere to the principle of gradual change. The cap should mandate only small cuts for the next 10–20 years and then begin to ramp up. Passing a bill now but mandating cuts later is better for the economy than delaying a bill, because it gives businesses an opportunity to plan for the future when making long-term investments. It also creates the incentives right away for entrepreneurs to begin developing new green technologies. In the long run, such innovation is always the most important factor for creating wealth out of the environment and improving environmental quality.

Whatever their feelings about applying it to carbon, conservatives and free market liberals alike can cheer the cap-and-trade approach to pollution as a victory for their ideals.

SPENCER BANZHAF is an associate professor of economics in the Andrew Young School of Policy Studies at Georgia State University. He is also a senior research fellow at PERC and a faculty research fellow at the National Bureau of Economic Research (NBER). He can be reached at hsbanzhaf@gsu.edu.

TOUGH QUESTION

WHAT WOULD A FREE MARKET CAP-AND-TRADE BILL LOOK LIKE?

A free market environmentalist cap-and-trade bill would:

- Rely on the market to decide how and where to reduce pollution

  No government-mandated building codes, lighting standards, or automobile codes. Finding the best way to comply with a cap is what markets do well and what governments do abominably.

- Provide flexibility with respect to the timing of reductions

  Industry should be allowed to bank permits for future use. This allows firms to time pollution-reduction efficiently.

- Adhere to the principle of gradual change

  Mandate small cuts for the next few decades, then ramp up, allowing businesses to plan for the future when making long-term investments.

BY JAMES G. WORKMAN

THE CALL—*or Cull of* THE WILD

From the moment it leaped out of captivity on January 12, 1995, the wolf has been fruitful and multiplied and replenished the earth. From a dozen Canadian transplants, 1,700 individuals in 250 packs now roam our Rocky Mountain wilds.

So, victory for the Endangered Species Act? Not exactly. The biological beast runs free. But the symbolic wolf remains caged in purgatory between science and emotion; state and federal officials; activists and ranchers; tourists and hunters. Now, in an unprecedented federal controversy, the wolf has thrust America's legislative branch against our judicial branch against our executive branch over whether the species has recovered enough to let states control it this fall by hunting.

So, how many wolves is "enough?" This question tests our national and cultural comfort zone; views range from zero to a million. After decades of paralysis it is time we shut up and answered with our wallets.

That's right. As a hunter, lifelong environmentalist, and wolf advocate at the U.S. Department of the Interior during the 1990s, I have a modest proposal: de-politicize the warm-blooded wolf by trusting its fate to cold market forces; let Montana and Idaho sell their peer-reviewed scientific quota of wolf hunting permit but ensure each license can be bought and sold on an auction block open to all U.S. citizens.

Heartless? Get over it. The truth is that *Canis lupus* has always lived and died with a price on its head. Greek officials in A.D. 46–120 paid five silver drachmas to a hunter for bringing in a dead male wolf. In 1630, America's pilgrims established the first colonial wolf bounty for the big bad antagonist of Old World fairy tales who threatened farm piglets and red-robed daughters. Within 300 years President Teddy Roosevelt was annually subsidizing the killing of 55,000 "beasts of waste and destruction."

Then Aldo Leopold—writer, hunter, game warden, wolf eradicator—had a religious conversion on the road to lupine extinction. He urged us to respect this alpha predator not as our moral equal, nor as a novelty, nor to commune with wild spirits, but because wolves completed our ecological community of interdependent subjects.

At that point, the market shifted. If cash killed off the 'sinister' species, cash brought 'charismatic megafauna' back to life. When passions ran high, cash cooled tempers. When ranchers stalled wolf reintroduction in court, environmental groups—namely Hank Fischer of Defenders of Wildlife—broke the political deadlock by offering livestock owners cash compensation for documented wolf kills.

That approach worked wonders. By recognizing the marginal value of wolf costs, he put an equal value on wolf benefits, which have grown considerably. Today wolf-obsessed tourists annually infuse the regional economy with $35 million in revenues, eclipsing total reintroduction expenses and ensuring there's no turning back.

Which begs our question: Why not extend incentives indefinitely to determine how many wolves *should* exist in Montana, Idaho, or America? Leverage the price paid per wolf's head for the advantage of all species, whether *Canis lupus* or *Homo sapiens*.

This fall, a Montana hunter can bid $19 or an out-of-state hunter can bid $350 for one of 75 licenses to kill a wolf and mount it in his den. Lupine lovers are outraged, but the only real scandal is that the license is so—ridiculously and unnecessarily—low. Public officials are leaving behind a potential windfall on the table, which it could collect through a fair and democratic open auction of each wolf hunting license.

Montana Fish, Wildlife, and Parks already knows how to run such an auction; it does so for bighorn sheep, moose, mountain goat, deer and elk hunting licenses. The difference is that a wolf auction would not be restricted to hunters. Indeed, an out of state "tree-hugger" or "animal rights nut"

could bid $351 or, hell, $9,351 for that same permit in order to let the formerly marked wolf run free for another year. The extra $1 (or $9,001) raised could help endow a national fund to compensate livestock owners.

Wait, couldn't an open auction just trigger a nationwide bidding war between hunters and howlers? Wouldn't competing groups and individuals start offering tens of thousands of dollars to decide whether a single wolf lives or dies? Might it unleash a crass commercial value on whether we stop or spread the call of the wild? Should amoral transactions determine how much an untamed howl is worth to us as a nation?

Yes, yes, yes and, absolutely and emphatically—yes. That is exactly the point. An open auction of wolf hunting permits explicitly quantifies what has been vague: Americans are split between those who loathe and love wolves. It then offers an honest, transparent, and accountable cost-benefit resolution to this division, a new way to measure our national tolerance.

Right now, both sides cancel each other out, lose-lose. Pro-wolf and anti-wolf advocates alike have financed political campaigns, emotional crusades, escalating lawsuits, and public relations ranging from glossy books and witty bumper stickers to coffee mugs and calendars. An auction would break the protracted stalemate, take politics out of the equation, and ensure private investments yield public dividends.

First, it harnesses passions to test, measure, and improve our character. Auctions would unlock and spread accountability, individual liberty, and responsibility.

Next, it shrinks the burden of government officials. Auctions remove the impossibility of a fair decision from judges, legislators, bureaucrats, scientists, and wildlife managers who sweat under pressure to please all sides at all times all at once.

It transforms both the physical and symbolic wolf from a looming liability into a desirable asset. Funds raised by auctions would flow into the coffers of cash-strapped and budget-slashed state wildlife managers, who could then reinvest funds into dozens of other worthy and science-based programs or wildlife habitat.

It improves the Endangered Species Act. Instead of slicing up a shrinking budget, auctions grow the pie with cash infusions, helping states focus on proactive habitat restoration over emergency room invasive surgery of critical species.

Finally, consider the ripple effect as controversy subsides. Anxious neighboring states—Utah, Oregon, Washington, Colorado—might be inclined to welcome, encourage, and actively reintroduce wolves if they knew of the financial bonanza from an open national auction that awaits recovery, delisting, and hunting opportunities.

Paraphrasing Voltaire, I may disapprove of your desire to hunt a wolf legally, but I will always defend your right to do so. At that point the question becomes: How much would you pay Montana for a license to kill, and how much would I counter your bid to ensure it howls on and on for at least one more year?

Open up the auction and let's find out.

JAMIE WORKMAN is author of the award-winning book *Heart of Dryness* and cofounder of the water-trading venture SmartMarkets LLC. Workman worked during wolf reintroduction from 1994–2000 as special assistant to U.S. Interior Secretary Bruce Babbitt. He is a PERC enviropreneur alum. He can be reached at jamesgworkman@gmail.com.

Submit YOUR Impressions of markets and the environment to: laura@perc.org

IS THE COMMON LAW THE

SOLUTION TO POLLUTION

BY JONATHAN H. ADLER

COMMON LAW LEGAL ACTIONS CAN EASILY HANDLE THE SIMPLE CASE IN WHICH ONE PROPERTY OWNER CAUSES OBVIOUS HARM TO A NEIGHBOR. BUT WHAT ABOUT THE NOT SO SIMPLE CASE?

"At the heart of free market environmentalism is a system of well-specified property rights to natural and environmental resources," explain Terry Anderson and Donald Leal in their seminal book, *Free Market Environmentalism.* Whereas conventional analyses characterize environmental problems as examples of "market failure," free market environmentalism (FME) identifies the lack of markets—and in particular a lack of enforceable and exchangeable property rights—as the source of environmental problems. To remedy such ills, FME proponents advocate the extension of property rights to ecological resources so as to facilitate their use and protection in a manner consistent with individual preferences, including any preferences for a clean and healthy environment. But are all environmental problems amenable to free market solutions?

A strong case has been made for FME with regard to many, if not most, natural resources. Property rights solutions are applied relatively easily to questions of natural resource management. It has been demonstrated theoretically and empirically that natural resources tend to be managed more efficiently and sustainably under property institutions than under most available political or regulatory alternatives. As a general rule, those resources incorporated into property institutions are better protected and managed more sustainably than their unowned or politically managed counterparts. Fish stocks, for example, under catch-share arrangements are managed far more sustainably than those governed by conventional regulation or left in the open-access commons. And privately owned forests exhibit higher rates of forest growth than those managed by the government or left in the public domain.

Environmental problems extend well beyond questions of natural resource management, however. Many major environmental concerns are related to pollution. Such problems arise out of conflicts between competing property uses. Activities undertaken on some lands cause the generation of waste streams or other byproducts that, when uncontrolled, infringe upon the use and enjoy-

ment of other lands or degrade resources that are held in common. Air and water pollution are prime examples, and global environmental concerns, such as climate change, loom large on the horizon.

At one level, pollution problems involve incompatible land uses and a failure to adequately define rights. Defining the rights enables landowners to resolve conflicts through voluntary exchange. According to Anderson and Leal, "The free market environmental approach to pollution is to establish property rights to the pollution disposal medium and allow owners of those rights to bargain over how the resource will be used." Yet even once the contours of the respective property rights are defined, these rights must be recognized and enforced. If property rights are violated or voluntary bargains breached, there must be a remedy if pollution is to be controlled.

Most free market environmentalists advocate the use of common law legal institutions to protect property rights and help prevent pollution. The reasoning is that the common law, with its emphasis on protecting property rights from interference by others through the doctrines of trespass and nuisance, is superior to administrative regulation at controlling pollution. Again, Anderson and Leal: "there is abundant evidence that the common law of property, nuisance, and torts is a way of making people accountable for their waste." Yet the evidence to date is more equivocal than advocates have acknowledged.

COMMON LAW CONUNDRUMS

Critics of the property-based framework suggest that transaction costs, collective action problems, and difficulties with scientific proof make the common law an unsuitable alternative for contemporary environmental regulation, even if it may be a useful supplement. Others argue that common law litigation is a poor fit for the particular nature of modern environmental injuries and that regulatory measures supplanted common law remedies because the latter proved incapable of solving modern environmental woes. The conventional wisdom, as articulated by noted environmental law professor Joseph Sax, is that "the traditional common law remedies were utterly inadequate to deal with contemporary environmental problems."

Some who are otherwise sympathetic to property rights and market-based policy solutions have expressed doubts about exclusive reliance on the common law, as well. Law professor Richard Epstein, for example, argues that common law actions may work "tolerably well" for relatively simple cases, such as when a factory pollutes the land of its neighbor, but that transaction costs are "prohibitive" when pollution is distributed across many properties through common resources, such as water and air, and affects many parties. Others fear the failings of the contemporary tort system far exceed those of the modern environmental regulatory state, and some who have advocated greater use of common law actions have second thoughts when common law nuisance theories are applied to large-scale problems like global climate change.

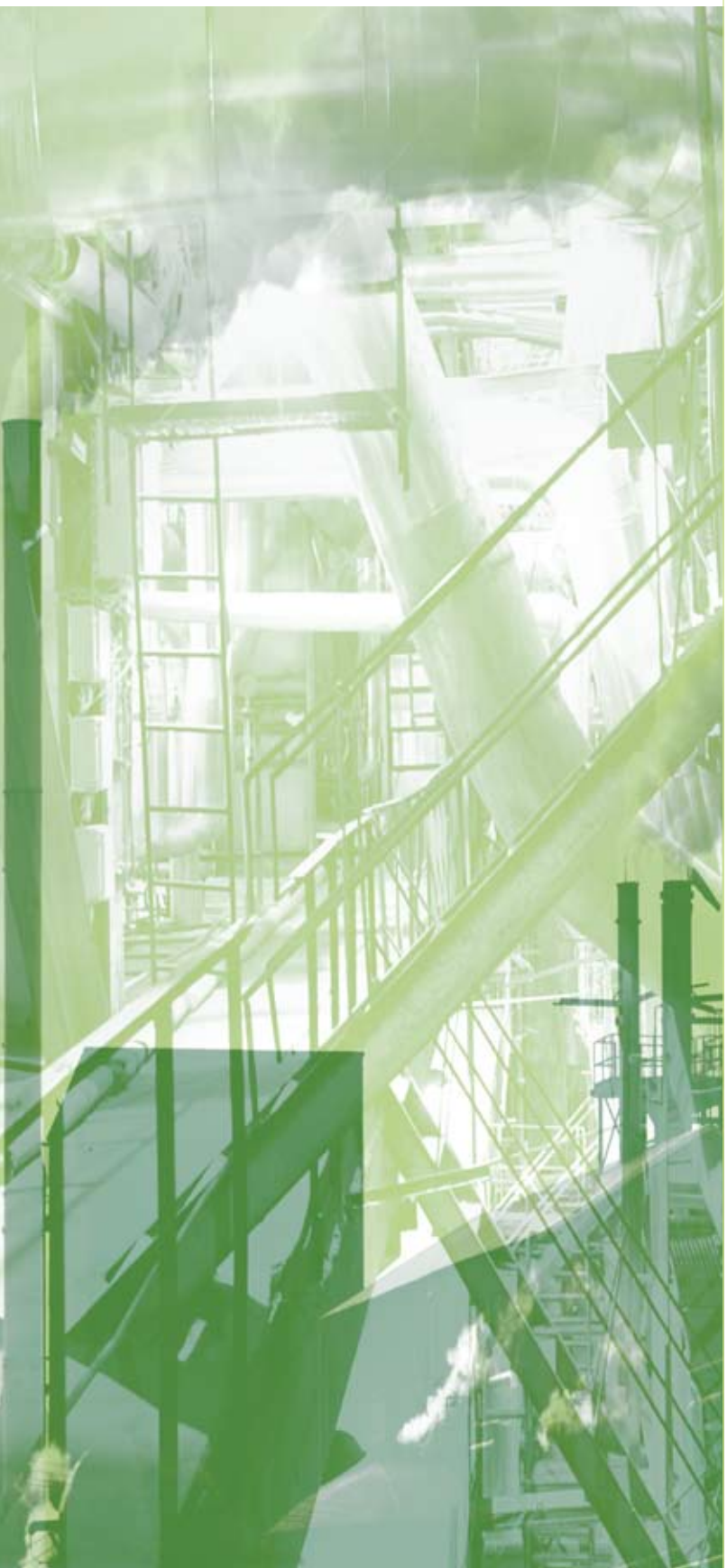
Common law legal actions can easily handle the simple case in which one property owner causes obvious harm to a neighbor. If emissions from a

cement plant foul a downwind property owner's air, causing clear damage, a contemporary nuisance action provides an adequate means of redress and can also provide a powerful incentive to avoid potentially polluting behavior in the first place. But what about the not so simple case? It is one thing to urge nuisance remedies when a factory dumps sludge into a pond owned by someone else, quite another when dozens or even hundreds of factories (or thousands of automobiles) emit invisible pollutants into the air or water, causing effects on numerous rights holders downwind or downstream. Even if property rights in environmental resources are fully specified—an implausible assumption—are common law causes of action a viable replacement for pollution control regulations?

OVERSTATED OBSTACLES

Where numerous rights holders are affected by a single firm's polluting behavior, it may be difficult or costly to organize a response. If the harm is spread across a wide area and affects numerous property owners, no individual owner may have suffered a harm sufficient to justify bearing the costs of organizing her neighbors. Even if the collective benefit to all of the rights holders along a given stream might justify the costs of filing a suit, transaction costs and free rider problems could conceivably prevent the victims of pollution from organizing to put an end to it.

Are such concerns about transaction costs overstated? Perhaps. Efforts by citizens to influence the legislative and administrative process are plagued by collective action problems of their own, yet some degree of organizing does occur. Where pollution



problems are severe enough, property owners have a substantial incentive to develop associations and firm-like institutions to reduce the transaction costs involved with protecting rights and negotiating solutions to incompatible uses. In addition, using the property rights framework as the foundation for environmental protection does not preclude legislative action to reduce obstacles to worthy legal actions.

Coordination problems and transaction costs were faced by the owners of riparian rights in British rivers, largely fishing clubs, in the decades following World War II, but this did not bar their efforts to protect their rights. In 1948, several fishing club members joined to form the Angler's Conservation Association (ACA). The ACA has helped fishing clubs pursue injunctions against upstream pollution ever since. The common law developed means of dealing with harms that are spread across numerous potential plaintiffs, none of whom would have sufficient incentive to file suit on their own.

BACK TO BASICS

Is the focus on the common law misplaced? Perhaps. What appeals about the common law may not be litigation so much as the principles upon which common law actions were based. The common law focused on the recognition and vindication of defined rights in resources. As a consequence, common law adjudication reinforces and facilitates private ordering and advancement of subjective value preferences, particularly insofar as common law decisions leave the parties in a position to negotiate around a court's judgment. As a consequence, common law adjudication of environmental disputes fosters decentralized decision-making as well as generating and uncovering information about preferences and scarcity. Common law cases are, by and large, context-specific and occur case by case. Where common law courts err, the consequences of such mistakes are rather confined, and there is an ability to learn and correct such mistakes in the future.

If these features are what make the common law appealing, it may be possible to reconceive the government's role in environmental protection as vindicating, enhancing, or building upon the common law rather than as erecting an alterna-

tive, competing regulatory structure. Even if pure common law approaches are not viable, greater definition of property rights in ecological resources and the application of harm-based regulatory approaches could move environmental protection in a market-oriented direction. Defining rights to threatened resources creates opportunities for property owners and offending facilities to develop new means of reducing the environmental impacts of polluting behavior.

If the common law is to be taken seriously as a viable alternative to conventional regulation, much work needs to be done. Making the case for the common law requires additional research and analysis into how common law systems operate in practice to address environmental concerns, how they can be improved, and how they compare with regulatory options. In the alternative, it is time for free market environmentalists to reconsider what made the common law attractive in the first place and develop ideas for regulatory or other mechanisms to resolve pollution problems while respecting property rights and facilitating market exchange.

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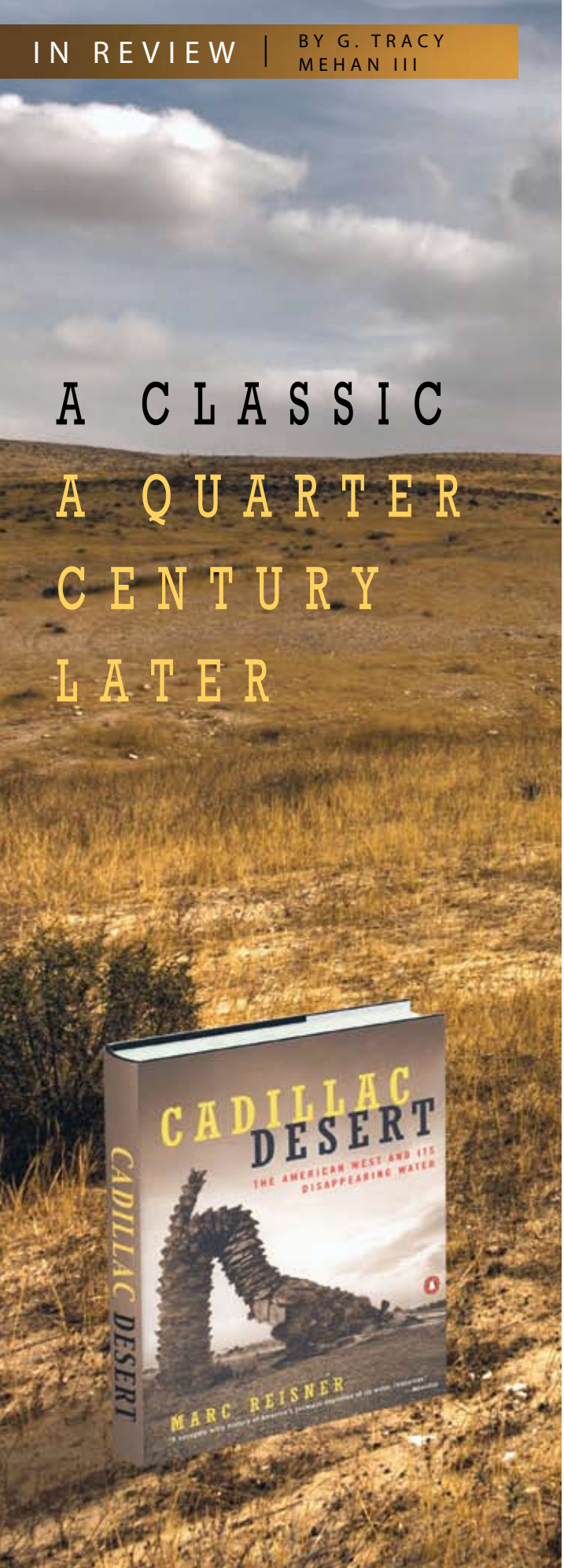
TOUGH QUESTION

IS THE COMMON LAW A SOLUTION TO POLLUTION?

Although common law actions can handle localized pollution problems, transaction costs can be prohibitive when pollution is distributed on a wider scale. Free market environmentalists should reconceive the government's role in environmental protection as vindicating, enhancing, or building upon the common law rather than erecting an alternative, competing regulatory structure. Free market environmentalists must reconsider what made the common law attractive in the first place and develop ideas for regulatory or other mechanisms to resolve pollution problems while respecting property rights and facilitating market exchange.



Marc Reisner's masterpiece *Cadillac Desert: The American West and Its Disappearing Water* is as compelling today as it was on publication in 1986. It was, clearly, advocacy journalism, but journalism of the highest order fortified with a tremendous amount of research, study, and numerous face-to-face interviews. It documented the transformation of John Wesley Powell's vision of a federal irrigation program into a perverse reality of pork-barrel spending and environmental devastation. Recent scientific analysis has confirmed most of the book's prognostications.

The year before Reisner's untimely death at age 51, *Cadillac Desert* was 61st on a list of the 100 best nonfiction books in English in the 20th century, as compiled by a panel from the Modern Library, a division of Random House. It was a finalist for a National Book Critics' Circle Award and inspired an award-winning documentary by the same name which was first broadcast in 1997.

So much of the waste and destruction perpetrated by the federal Bureau of Reclamation and the Army Corps of Engineers, which were engaged in a dysfunctional competition with each other for decades, were predicated on the "myth of the independent yeoman farmer," according to Reisner. This Jeffersonian ideal, ultimately, morphed into rank rent-seeking by wealthy growers, big engineering and construction firms and urban water departments—all of whom were adept at "farming the government."

States were not without culpability either. Reisner described California's State Water Project as "one of the country's foremost examples of socialism for the rich."

"With huge dams built for him at public expense, and irrigation canals, and the water sold for a quarter of a cent per ton—a price which guaranteed that little of the public's investment would ever be paid back—the West's yeoman farmer became the embodiment of the welfare state, though he was the last to recognize it," wrote Reisner. "And the same Congress which had once insisted he didn't need federal help was now insisting that such help be continued, at any cost."

Reisner, warming to his theme, continued: "Released from a need for justification, released from logic itself, the irrigation program Powell had wanted became a monster, redoubling its efforts and increasing its wreckage, both natural and economic, as it lost sight of its goal." Powell's vision was one of limited bounty on a tiny fraction of land suitable for irrigation. "It is hard to imagine that the first explorer of the Colorado River would have welcomed a future in which there might be no rivers left at all."

Having only just read *Cadillac Desert*, and having learned about it primarily through the writings of conservationists and environmentalists, this reviewer was pleasantly surprised, ecstatic really, by how much of the book is focused on the economic outrages of congressional pork-barrel spending and water projects which were a joke in terms of cost-benefit analysis. And this is before you get to the environmental costs, the removal of Indians from tribal lands, outright graft, and political venality. The book appeals to audiences as diverse as the Sierra Club and the Tea Party.

Given its origins in the New Deal's push for public works projects, the reclamation and flood control exertions of the Bureau and Corps soon transformed themselves into a syndrome of monomaniacal dam building as almost an end in itself. Literally, tens of

thousands of dams, i.e., "water projects," many built on the flimsiest of justifications, were routinely ordered up, with the active encouragement of the federal agencies, by politicians across the political spectrum—Republican and Democratic, conservative and liberal, green or brown, except for poor Jimmy Carter.

Having decided, for very sound reasons, that the age of water projects should come to an end, President Carter, in a classic case of political over-reach, drafted an extensive "hit list" of dozens of big dams and irrigation projects for withdrawal of funding. "Carter was merely stunned by the reaction from the East; he was blown over backward by the reaction from the West," reported Reisner.

"Of about two hundred western members of Congress, there weren't more than a dozen who dared to support him," said Reisner. "One of the projects would return five cents in economic benefits for every taxpayer dollar invested; another, a huge dam on a middling California river, would cost more than Hoover, Shasta, Glen Canyon, Bonneville, and Grand Coulee combined."

Carter eventually caved in to Congress. "To build an expensive dam, a spillway, an outlet works, and canals in order to grow grass or alfalfa is not generally an economically rewarding proposition. It can, however, be a politically rewarding one," noted Reisner wryly. "To paraphrase what someone said about pleasure and pain, economics are an illusion, while politics are real."

Writing in his Afterword to the 1993 revised edition of *Cadillac Desert*, Reisner observed, "If free market mechanisms—which much of western agriculture publicly applauds and privately abhors—were actually allowed to work, the West's water 'shortage' would be exposed for what it is: the sort of shortage you expect when inexhaustible demand chases an almost free good. (If someone were selling Porsches for three thousand dollars apiece, there would be a shortage of those, too.)" Reisner would, no doubt, be pleased with the current movement toward water markets, water trusts, full-cost and conservation-based pricing, water reuse and recycling, not to mention the growing understanding of the implausibility of federal subsidies generally.

Besides his strong commitment to economic sanity and political integrity, Reisner was, first and foremost, passionate in his commitment to the natural world which pervades the pages of *Cadillac Desert*. "The cost of all this [federal water development], however, was a vandalization of both our natural heritage and our economic future, and the reckoning has not even begun," wrote Reisner.

"Thus far, nature has paid the highest price. Glen Canyon is gone. The Colorado Delta is dead. The Missouri bottomlands have disappeared. Nine out of ten acres of wetlands in California have vanished, and with them millions of migratory birds."

In the course of describing the "thorniest desert" in which today's water lobby finds itself, he highlights the "ecological legacy of its predecessors": "By erecting thirty thousand dams of significant size across the American West, they dewatered countless rivers, wiped out millions of acres of riparian habitat, shut off many thousands of river miles of salmon habitat, silted over spawning beds, poisoned return flows with agricultural chemicals, set the plague of livestock loose on the arid land—in a nutshell, they made it close to impossible for numerous native species to survive."

Reisner was prescient in his warning regarding croplands ruined by salt poisoning from irrigation return flows and the conflicts which, inevitably, arise between high-value municipal and industrial water use and agribusiness's water uses, which account for a very small part of GDP. Only his predictions on silt build-up threatening the storage capacity of dams has been shown to be slightly less pressing, at least for now.

In a special issue of the Proceedings of the National Academy of Sciences this past December ("Reclaiming freshwater sustainability in the *Cadillac Desert*") 15 scientists and researchers, led by Dr. John Sabo, an Arizona State University associate professor, applying modern scientific tools and mapping technologies unavailable during Reisner's time, found most of his conclusions to be scientifically correct.

According to Dr. Sabo, "We asked, is it really as bad as [Reisner] said it is in the book, and are we still where we were in 1986?" "Now we know the answer to both those questions: yes."

The Sabo team estimated that the equivalent of nearly 76 percent of streamflow in the *Cadillac Desert* region is currently appropriated by humans, and this figure could rise to nearly 86 percent under a doubling of the region's population as projected over the next 25–40 years. Moreover, "western cities have much larger virtual water footprints, largely owing to the more arid climate, and western crop lands export at least an equal magnitude of virtual water as cities and croplands east of the 100th meridian." Los Angeles, Las Vegas, and Phoenix are the top three urban footprints in the country. Quelle surprise.

"The cards are stacked high against freshwater sustainability in the West," says Dr. Sabo. "Something will have to give, and it likely will be the price of water and high quality produce."

Marc Reisner's *Cadillac Desert* is truly a magnum opus of American conservation which has provided a model of what sustainability is and is not. It was way ahead of its time, yet timeless in the lessons it taught. It is a book that will be studied for decades to come because of its insight into the environmental consequences of government failure as much as market failure.

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THINK LOCAL: WHEN AND FOR WHICH ENVIRONMENTAL PROBLEMS?

BY SARAH ANDERSON

Proponents of free market environmentalism do not usually invoke government as part of the solution to environmental problems. But when they do, free market environmentalists promote governance by the smallest entity possible. PERC, for example, advocates using land trusts or endowment boards to help manage public lands. Arguments for smaller government imply that local control will produce better environmental policy because representatives are closer to their constituents and, therefore, more responsive. It is also argued that competition between multiple smaller governments leads to better policy outcomes. When governments compete, constituents win.

IS LOCAL ALWAYS BETTER?

There are typically three arguments given for local representation offering better solutions to environmental problems. First, local governments better represent local interests; and there might be shared values between local interests and the interests of free market environmentalists. Regarding the management of the Grand Staircase–Escalante National Monument, for example, many locals preferred less governmental supervision of the land and free market environmentalists were recommending an administrative trust arrangement. But this alignment of interests ought to be thought of as subject to change, or even accidental. Moreover, this representation of local interests might instead facilitate overexploitation.

Consider the case of a fishing stock shared by two localities. Each local jurisdiction might, depending on the alignment of interests, have the incentive to overexploit at the expense of the other jurisdiction. Clearly this would be the case if both local governments represented fishers. Each would have the incentive to overfish—to snag the fish before the other locality could do so. Thus, with public good problems that cross political boundaries, the tragedy of the commons brought about by individual decisions can simply be replicated by the decisions of local governments. Consequently, this reasoning should be put aside as a convenient but ultimately unconvincing argument for local control.

The second, and more compelling, argument for local control is that representation of local interests produces better environmental outcomes. Favorable environmental outcomes might come about because of superior local understanding and knowledge of an environmental situation. This is the reasoning invoked by arguments against "one-size-fits-all" command-and-control solutions to environmental problems. For example, residents might know where the spawning grounds of the fishery are and be able to encourage the local government to limit fishing in those grounds. Nobel laureate Elinor Ostrom argues that, for small common pool resources, this localized knowledge plays an important role in designing the appropriate institutions to govern and enforce the rules regarding the resource.

Given the role of localized knowledge, it seems clear that a more appropriate argument than to simply prefer local over state control and state over national control is to match the size of the government to the size of the environmental problem. If the size of government was infinitely customizable to each issue, it should be no larger than the size of the problem. Governments of various sizes, however, are costly to set up, so choices must often be made from a discrete set of levels. With this consideration in mind, optimal jurisdiction size can actually be larger than the scope of the problem since it might be necessary to choose federal over state management for a regional problem.

The third argument for local government as preferable to larger governments is that multiple jurisdictions can facilitate competition, even for public goods. As the Tiebout model explains, people can choose which jurisdiction they prefer by voting with their feet. This process encourages local governments to provide quality public goods. This is perhaps easiest to see in the market for houses near high-quality public schools, but it also seems to hold in the environmental arena. Economist and PERC fellow Spencer Banzhaf and his colleague Randall Walsh recently found that areas around large industrial facilities with high levels of pollution experienced population decline, while neighborhoods that cleaned up gained population. This movement of people, and potential voters, gives local governments the incentive to provide public goods.

It is unclear, however, whether a causal link from governmental competition to good governmental policy can be established. Competition as a source of good governmental policy would require that politicians respond to the effects of people moving (e.g. lower housing prices, loss of population). In other words, the movement of constituents due to the underprovision of environmental public goods must translate into more difficult political reelection prospects. But this link is unclear and limited by the very movement of people. In the example of the fishery, a locality that sets fishing quotas too high would have to observe conservationists leaving and feel an electoral impact. But if those who are leaving are exactly those who oppose the policy, it leaves proportionately more fishers and no incentive to change the policy undermining the link between better environmental policy and competition. The competition can result in more variation in policy outcomes than would a more centralized form of decision making, particularly if heterogeneous preferences are involved. But there is not an electoral reason to believe that it will lead to better environmental policy.

ON THE TABLE

Evaluating these three arguments leaves several open questions. If local governments represent local interests better, does this necessarily lead to better environmental policy? If the environmental problem is sufficiently large, local representation could easily serve to replicate the tragedy of the commons at the governmental level. Each local government would have the incentive to overexploit a common pool resource shared by another jurisdiction, prompting the same environmental problem that government is often tasked to solve.

One way to rephrase the maxim of harnessing local control to avoid an extension of the tragedy of the commons might be to argue instead that the boundaries of government ought to match the boundaries of the problem. Drawing boundaries that encompass the interested groups would help to ensure that no major participant is left without an opportunity to counter the other groups. And the heterogeneity of interests in larger populations would help to reduce the possibility of one faction organizing at the expense of the others. Of course, political boundaries rarely coincide with boundaries that would facilitate good management of natural resources (witness state boundaries drawn in the middle of rivers). This recommendation could prove difficult to implement in practice.

The second question left unanswered relates to competition between governments. If multiple competing jurisdictions are thought to bring about better environmental policy, what is the mechanism for this improved decision making? Do politicians respond to the movement of constituents by more efficiently allocating resources? If those who oppose the policy are those who move, then individuals might be well-represented in terms of living in areas where the policy matches their preferences, but it is not clear that this process has produced better environmental policy. Moreover, as those concerned with environmental justice have pointed out, the inequality implied by this distribution of resources may be problematic.

This brief analysis offers some insight into answering the question of when and for which kinds of environmental problems local control is preferable. For localized problems, there appears to be no strong argument against local control. The local boundary encompasses the relevant interests and the externalities are fully internalized. Particularly if there is specialized local knowledge, the outcome from a local government is likely to be better. But for larger problems, larger governments are more likely to take into account broader interests and to avoid pushing the tragedy of the commons up to the governmental level.

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TOUGH QUESTION

DOES SMALLER GOVERNMENT ALWAYS PRODUCE BETTER ENVIRONMENTAL POLICY?

For local problems there is no strong argument against local control. The local boundary encompasses the relevant interests and the costs are fully internalized. But if the environmental problem is sufficiently large, local representation could serve to replicate the tragedy of the commons at the governmental level. Each local government has the incentive to overexploit a common pool resource shared by another jurisdiction, prompting the same environmental problem that government is tasked to solve. For larger problems, larger governments may be the best option.

ECONOMIST, n. a scoundrel whose faulty vision sees things as they really are, not as they ought to be. —*after Ambrose Bierce*

CHEAP WATER DEADLY WATER

Waterborne diseases are responsible for 20 percent of deaths in children under the age of five. Microbes such as *E. coli* found in fecal matter cause diarrhea that kills by dehydrating its victims. Such organisms are routinely found in the springs, wells, lakes, and rivers used as water sources in the developing world. Naturally-occurring springs, often the most important source of water in these locales, can be cheaply protected by encasing them in concrete. Rather than seeping through the ground, the water flows through a pipe, thus protecting it from microbial contamination. Recent research by Michael Kremer et al. (2011) shows the dramatic impact spring protection can have on waterborne childhood disease and also illuminates why the private sector has not provided such protection.

Naturally-occurring springs are an important source of water in much of the developing world, especially Africa. Kremer et al. focus on Kenya, where almost 75 percent of household water comes from such springs. In Kenya, local customs—and laws affirming such customs—prevent the owners of springs from charging users for the water. Such customs reduce the monetary cost of the water for consumers. But the customs also discourage landowners from investing in spring protection that would ensure access to *clean* water. The result is high childhood mortality due to waterborne disease.

A spring can be protected from microbial contamination at a cost of about US$1,000, with roughly $30 per year in maintenance costs after that. The authors show that such protection reduces the incidence of *E. coli* by two-thirds and cuts diarrhea in young children by one-quarter. Despite these clear benefits, it seems unlikely that private action will yield much spring protection in the foreseeable future.

A pivotal reason is the low value placed on human life in Kenya, a value that Kremer et al. are able to directly estimate. The chief cost of acquiring water in much of Kenya is the time spent walking to and from the nearest water sources. Households reveal their preferences for cleaner water when they choose to travel farther to collect water from safer springs. This enables the authors to infer the value households place on clean water and, implicitly, the value they place on the illness and fatalities thereby averted.

The authors estimate that the value to the typical Kenyan household of averting a single case of childhood diarrhea is less than $1, and the value to a household of preventing the death of a young child is less than $800. Overall, Kremer et al. estimate that the typical household would be willing to pay no more than

Naturally-occurring springs can be protected with a concrete encasing as a preventative against microbial contamination.

$3 per year for access to a protected spring. These numbers seem stunningly low by western standards, but they reflect the reality of life in much of the developing world. In Kenya, for example, agricultural labor is paid less than $1 a day and per capita national income is only $800 per year.

So what is to be done about deadly water in Kenya or elsewhere in the developing world? Simply mandating that spring owners be permitted to charge for their water would induce some investment in spring protection. But the authors note that there are two problems with this approach. First, Kenyan households place such a low value on the cleanliness of water that private landowners would not be willing to invest much in protection. Indeed, Kremer et al. estimate that, under market pricing, the incidence of privately-protected springs would be only about 5 percent. Second, because the springs are geographically dispersed, each is much like a local monopoly—and subject to monopoly pricing. Such pricing would induce households to switch to other sources such as ponds and rivers that involve more travel time and often are more hazardous than even unprotected springs. Overall, the authors argue, market pricing would actually make most households worse off, which may help explain why the custom of unpriced water originally evolved in Kenya.

The solution to dirty water in Kenya and elsewhere is likely to come only from economic growth, driven by secure property rights and the rule of law. Robert Hall and Chad Jones (2007) have estimated that the demand for health rises roughly with the *square* of income. This suggests, for example, that a doubling of per capita income would quadruple the demand for spring protection. The spread of legal institutions that facilitate growth will thus eventually raise the willingness to pay for cleaner water above the costs of supplying it. Once that happens, the market will not be far behind in providing what people want—safer water and healthier children.

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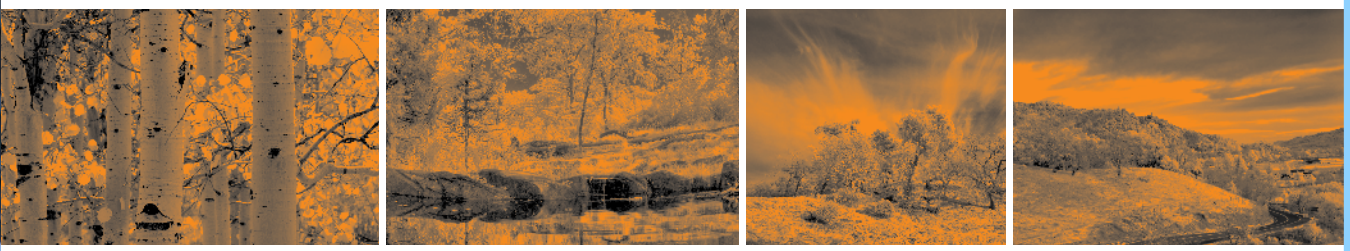


THE PROMISE AND PROBLEMS OF FREE MARKET ENVIRONMENTALISM

BY CHARLES D. KOLSTAD

Markets sometimes fail to allocate resources efficiently. Such failure is particularly prevalent in the environmental arena where markets tend to underprovide environmental goods such as parks and open space and overprovide environmental bads such as air pollution.

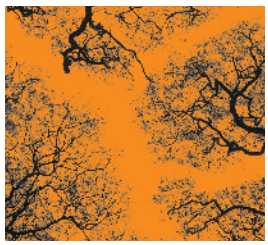
A common solution to market failure is government provision or regulation. But as free market environmentalists have argued, this path includes failures of its own—government failures. The literature on free market environmentalism (FME) has consistently documented the problems associated with government providing public goods. The argument, well buttressed by evidence, suggests that in many cases markets are more efficient than the government at protecting the environment. And where market failure is persistent, modifying institutions to define property rights can often solve the failure.

While FME has much to offer for problems pertaining to natural resource allocation, the case for FME is weaker when dealing with environmental goods, such as providing clean air. The basic problem lies in the nature of the market failure.

One type of market failure is the inability to exclude individuals from using the good. Economists call this nonexcludability. Excludability is necessary for a market to operate so that individuals can exchange money for access to the good. Free market environmentalism focuses on designing property rights—institutions that can overcome the nonexcludability. With well-defined property rights, I can restrict your access to a good that I may own. Natural resource problems, which are plagued by nonexcludability only (open-access problems) are perfect candidates for FME solutions.

The other type of market failure is more subtle and has to do with the nature of consumption. If my consumption of a good precludes your consumption of a good, economists call the good rival (e.g., a hamburger). If my consumption of a good does not diminish what is available to you, we call the good nonrival (e.g., open space or pollution). Rivalry is necessary for a market to function efficiently. Environmental problems that involve nonrivalry are not "fixed" by well-defined property rights. Here, markets may function but they will not function efficiently. In this case, FME may improve an allocation but FME cannot "fix" the market failure.






FME AND NATURAL RESOURCES

FORESTS

To further explore the promise and problems of FME, consider the following examples. Forests in the United States provide three primary services: timber, recreation, and habitat. Terry Anderson and Donald Leal make a good case in their classic book, *Free Market Environmentalism*, that the politically-driven Forest Service does a mediocre job of managing forests. They point out that state forests are often better managed for timber and recreation and show that private forests generate revenue from recreation as well as from timber and thus have an incentive to manage the forests to provide both. They further argue that some habitat protection can be converted into habitat for hunting (for which hunters will pay handsomely). Finally, for environmental habitat, the authors argue that non-government organizations, such as the Nature Conservancy, raise funds to invest in habitat protection on private lands.

This argument is sensible for timber production. Timber is basically a private good and the case that private actors provide more efficient management is convincing. The argument is less persuasive for recreation and habitat. Some types of recreation, such as campgrounds, are rival and can be provided privately. But other aspects of recreation, such as open spaces and hiking trails, are generally nonrival. In these cases markets tend to set prices too high, and supply will be smaller than efficient. The FME argument that private markets will provide habitat relies either on recreation being correlated with habitat such as hunting or the existence of environmental organizations providing habitat.

WATER

Water supply in the arid West is another important example. Water is valued for consumptive uses such as agriculture and for nonconsumptive uses such as habitat. And water supply is subject to significant fluctuations, leading to drought and flooding. The key issues are managing consumption, so that uses with high social value are adequately served, and augmenting storage facilities to smooth out the natural fluctuations in water supply.

When the West was settled, the common law method of allocating water rights prevailed. The prior appropriation doctrine emerged as a response to scarcity. Under this standard, water rights are decoupled from land and thus can be bought and sold. Here FME principles are working to help solve the consumptive use problem.

Nonconsumptive uses of water, however, may not fit as well into the FME framework. There is a growing recognition that maintaining minimum river flow or unobstructed passage through a river has environmental benefits—particularly to fish. These fish may be part of a commercial or recreational fishery, in which case markets may reflect demand, or the fish may be part of an ecosystem with societal values that are outside of markets. In this latter case, the commodity (a noncommercial species) is nonexcludable and nonrival and thus not as amenable to market allocation and FME solutions.

FISHERIES

Managing ocean fisheries presents another challenge for FME as fisheries are not fenced and are thus nonexcludable. Yet the emergence of creative property rights regimes to overcome the open-access problem is addressing this issue. Catch-share systems have evolved to allocate an exclusive share of the total allowable catch to individual fishers or cooperatives. Such property-rights regimes work when fisheries fall within a country's economic zone. In some

cases, countries such as Canada and the United States can cooperate to manage fisheries that span across more than one country. But property-rights regimes that cover fish that migrate over long distances, such as tuna, will be more difficult to develop.

FME AND POLLUTION

The previous examples of FME solving an efficiency problem concern natural resources. Pollution and waste production and disposal are another area of environmental concern. Markets work fine for municipal solid waste, which is rival and excludable, as long as there are laws against littering. In fact, in many parts of the United States, municipal waste disposal is private. The only point at which it breaks down is the ultimate disposal—assuring that wastes do not leach into the ground water.

The FME solution to air pollution is more problematic. An idea typically offered includes a technological innovation such as seeding emission streams with tracers to determine how much of the ambient pollution is due to specific sources. Another solution is to rely on common law or nuisance law—if party A is causing injury to party B through pollution discharge, then party A may seek remedy in court.

These ideas for managing air pollution are unsatisfactory. Smoke and similar types of air pollution are nonrival bads. Even if property rights could be defined to make this bad excludable, which is beyond current technology, the fact that the bad is nonrival means that market solutions will not be efficient. If one could identify the source of all of the pollution in Los Angeles, the transaction costs associated with victims seeking remedy in court would be enormous and would inevitably lead to inefficient provision of pollution—the




advantage is with the polluter. Even if the nonexcludability component can be overcome through technology and innovative property rights arrangements, the nonrival nature of most pollution problems means that government and regulation must be central players in managing these resources.

WHAT CAN BE DONE

The basic problem is that FME relies on properly defined markets to take care of both the supply and demand for environmental and natural resource goods. This works well in many cases. But the demand side cannot be fully decentralized in the case of nonrival goods and bads. What can be done, and perhaps this should be embraced as part of FME, is that the government can set up markets to implement societal goals such as tradeable permit markets. This does not completely solve the problem of government failure since the societal goal being implemented may not be optimal. One example is the use of Renewable Energy Credits (RECs). Electric utilities are charged with achieving a certain fraction of their generation from renewable sources. Furthermore, the renewable nature of generation can be unpackaged from the electricity and bought and sold in a market. These are the RECs. The market will efficiently implement the societal goal. The societal goal, however, is questionable. If the goal is to control carbon, why not do that directly rather than through an indirect means?

A pseudo-FME approach to solving the nonrivalry problem is to use artificial markets to allocate the environmental good—for instance, an emissions fee. We have not had enough experience with such decentralized economic incentives, but there are indications that there may be political problems in implementing an artificial market for environmental goods. That evidence comes from experience with attempts to implement congestion charging around the world, most recently the failed attempt by Mayor Michael Bloomberg to implement such a system in New York.

Although evidence is mixed, the public appears to be reluctant to embrace the use of prices for incentive purposes only. To an economist, improving incentives is the primary reason for implementing prices on pollution. But the public appears to be much more comfortable and supportive of prices being used to raise revenue to pay for something worthwhile. In a 2008 review of opinions on road pricing around the world, Johanna Zmud and Carlos Arce concluded that the disposition of the revenue raised is key in increasing support for road pricing and tolls. However, as scholar Jonas Eliasson explained, this is not unequivocally true, as support for congestion pricing in Stockholm increased with experience.

The point is that using artificially induced prices for pollution primarily serves an incentive purpose. It is not clear that there is political support among the population for such a use of prices, as opposed to the conventional revenue-raising use of government-instituted prices. The jury is still out on this issue.

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TOUGH QUESTION

CAN FREE MARKET ENVIRONMENTALISM BE APPLIED TO ALL ENVIRONMENTAL PROBLEMS?

Free market environmentalism works well for problems pertaining to natural resource allocation, where well-defined property rights solve the problem of *excludability*. It is less efficient at dealing with environmental goods, such as the provision of clean air, which is *nonrival*. Proponents of free market environmentalism rely on markets to take care of both the supply and demand for environmental and natural resource goods. While this may work for natural resources, the demand side cannot be fully decentralized in the case of nonrival goods and bads. What can be done? Government can set up markets to implement societal goals such as tradeable permit markets.

GREENER PASTURES

BY LINDA E. PLATTS

NOT YOUR TYPICAL DAY [OR NIGHT] IN THE TREEPOD PARK

It is dusk in Boston. Lights glow from apartment windows, and families wander down to the park to enjoy the end of day. Parents swing in hammocks under the trees and children play on the seesaws. As the sky darkens to night and the city lights appear, the trees in the park glow all the way from the trunk to the highest branches.

If you visit Boston in 2012, you may find parks like these where live trees have struggled and died, but Treepods, artificial trees made from plastic bottles, fill the void. Of course, the leaves don't bud out in the spring or rustle in the wind, but a Treepod park provides a tranquil urban space, a social gathering spot, and most importantly, removes CO_2 from the air—a critical function of real trees.

It was Klaus Lackner, a geophysicist at Columbia University, who discovered how to pull ambient CO_2 out of the atmosphere and store it in a man-made resin material until it could be permanently sequestered. Inspired by Lackner's discovery, a nonprofit firm wanted to introduce the CO_2-absorbing technology to Boston and hired a Paris-based studio to design the project.

Naturally, the designers chose a tree as their model—the dragon's blood tree from Yemen. Its broad umbrella-like top provides large swaths of shade, while the top branches are ideal for supporting the photovoltaic cells that power the tree. The seesaws and hammocks are a source of kinetic energy for the air filtration system and the interior lighting.

While the Treepods have generated excitement and been touted in the media as "sleek yet functional design pieces that would fit any urban environment," Lackner's goal was never to create urban furniture. He wanted to remove CO_2 from the air on a large scale. He believes that people will not change their lifestyles in any significant way as long as fossil fuels are cheap and readily available, so he decided to deal with CO_2 rather than look for new fuel sources.

Unlike the Parisian design, Lackner's synthetic trees are the size of football goal posts with slats resembling Venetian blinds in between the posts. As the wind blows through, a coating on the slats absorb CO_2 just as real trees absorb it through their leaves. Eventually it will be sequestered or sold to companies that use CO_2. The prototypes have turned in some impressive results, absorbing CO_2 1,000 times faster than a real tree and having the strength to hold 90 tons of CO_2—the rough equivalent of annual emissions from 15,000 cars.

Once considered a fringe idea, artificial trees are now being taken seriously. As more people dedicate themselves to similar projects, Lackner predicts the costs will drop, making artificial trees a real option for reducing CO_2 in the atmosphere.

KEEP YOUR EYE ON THE SKY

The Goodyear blimp circling above the football stadium on a crisp autumn afternoon probably does not bring to mind a revolution in worldwide cargo transport or the transformation of secret military surveillance. Well think again, because that future is almost here.

A new type of airship will soon be taking to the skies, although it bears little resemblance to that friendly blimp or the ill-fated Hindenberg other than its bubble-like appearance. Aviation companies here and abroad are on the brink of introducing a new generation of airships that feature low fuel consumption, low overhead, no infrastructure investment, and the potential to lift 40 tons of cargo.

Trucks, trains, freighters, and cargo planes do most of the heavy lifting right now, and, except for trucks, they are all more expensive to build than an airship at about $5 million. In addition, they require billions of dollars for infrastructure from highways to airports and landing strips, from train tracks to navigable harbors and docking facilities. The infrastructure in turn requires full-time maintenance and on-site work crews. In northern Canada, the once reliable and economical ice roads are now the victims of warming temperatures. Once serviceable for three months of heavy truck traffic, that number has shrunk to 30 days in many areas. Fuel costs have also skyrocketed and the future on that front looks bleak.

Airships, on the other hand, have managed to float above many of these earthbound problems. They are built with a tough skin over an aluminum skeleton, then filled with helium—a nonflammable, buoyant natural gas that lasts indefinitely. The buoyant nature of the airships allows them to lift off without added power, but requires motors at flying altitude for navigation and propulsion; top speed is about 80 mph. As an added bonus, sections of the ship's exterior are covered in a thin film that collects energy from the sun, supplementing the power supply.

An airship can fly over thousands of miles of roadless land to deliver equipment and supplies to mining sites, construction projects, remote villages, and disaster sites. Largely unaffected by weather, changing seasons, or ground conditions, such as those created by natural disasters, experts predict that airships can operate 300 days a year.

Bruce Prentiss from the Transport Institute at the University of Manitoba has long been a proponent of airships. He reports that in addition to domestic uses, the military would like to send an airship the size of a football field aloft to enhance defense systems and intelligence gathering by hovering in the stratosphere—far above any restricted air space.

Keep an eye on the sky, because in just a few years you may be sitting in the bleachers one fall day when an airship the size of a football field floats by.

A FEW FERRATES COULD CHANGE THE WORLD

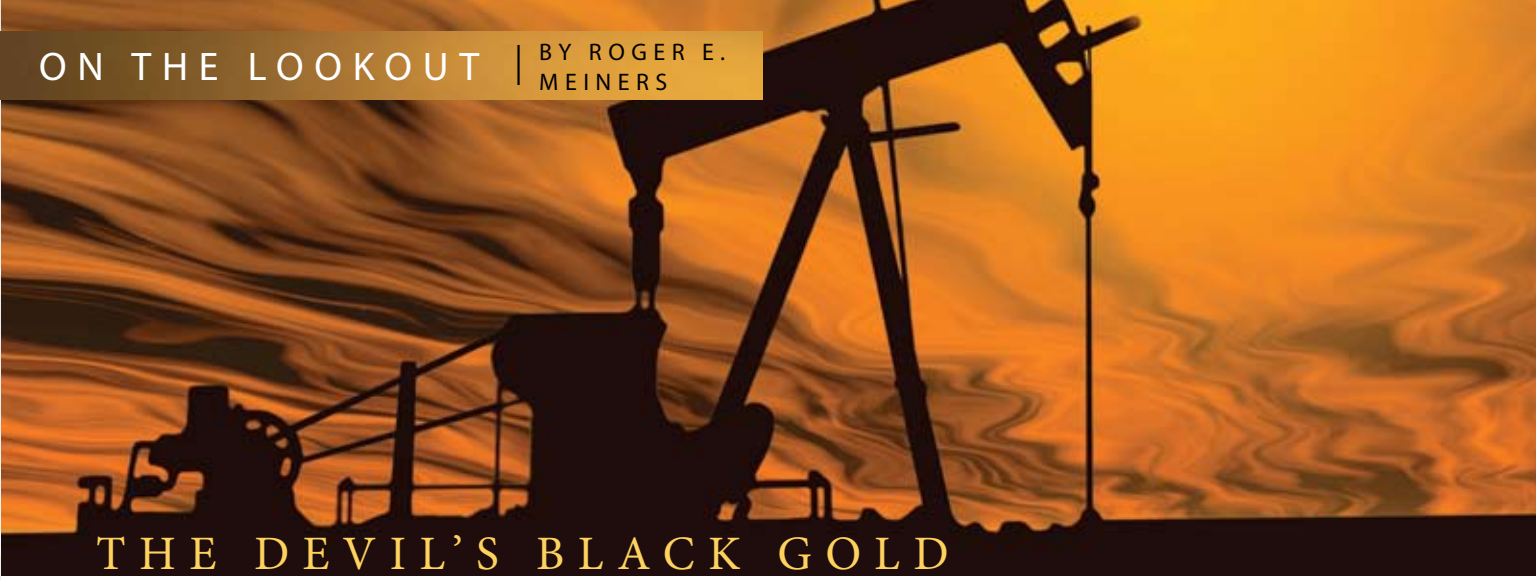
In the not too distant future, a water treatment module carried in the bed of a pickup truck could be the best and cheapest water purification system on the planet. For just $30, it would purify a million gallons of polluted water. Luke Daly, founder of Ferrate Treatment Technologies in Orlando, FL, has taken a chemical compound discovered almost 300 years ago, and invented a technology that could be critical to global wellbeing in the 21st century.

Ferrates are iron-based compounds that have been called "the most powerful oxidants in nature." They destroy bacteria and viruses, attack residual drugs, and attract other chemicals, including dissolved metals. The treated water contains no residual chlorine and exceeds today's water quality standards. Although more than 450 scientific papers have been written discussing the benefits of ferrates, Daly was the first to design a practical, cost-effective technology that could potentially improve the health and living conditions of billions of people.

The sticking point, according to Daly, has been the high cost of manufacturing and commercialization. Even well-capitalized firms have failed to find a solution. The problem stems from the highly reactive and unstable nature of ferrates, which makes them difficult to store and transport, and ultimately too expensive for practical use on a broad scale.

Daly's firm attacked the problem by designing a portable treatment module that could manufacture the ferrates on site. By eliminating storage and transport, it was able to reduce overall costs by 90 percent. It took more than nine years of trial and error, redesign, testing, permitting, and jumping through government hoops before the technology was perfected and the company was authorized to sell drinking water to the public.

The *Wall Street Journal* has recognized Ferrate Treatment Technologies as one of the "Best and Brightest" new companies, *Forbes* magazine named it a "Technology Pioneer," and a recent write up in *The Economist* gave it a favorable nod. The global demand for clean drinking water will be critical in the coming decades. This inexpensive, portable, and environmentally friendly technology is well on its way to helping the world meet one of its most basic challenges.



THE DEVIL'S BLACK GOLD

"Chevron Guilty of Polluting the Amazon" reported Greenpeace on its website in February. Chevron was ordered by a court in Ecuador to pay $9.5 billion in damages for injuries imposed on people and the environment in Ecuador from its oil operation.

Does Greenpeace think "justice" is likely in Ecuador? It is one of the most corrupt nations in Latin America, coming in at #127 (out of 178 nations) in the Transparency International rankings, tied with Syria and Belarus.

This case goes way back. As a federal court explained in *Phoenix Canada Oil Co. Ltd. v. Texaco* (1988), under a 1965 agreement with Ecuador, Texaco, which later became Chevron, searched for oil, found it, and in 1972 began transporting oil to the coast via a 318-mile pipeline that cost $108 million—back when that was real money. Seeing the bonanza, the government of Ecuador jacked up the royalty rate in 1969 from 6 to 11 percent.

The next government raised the royalty rate to 17 percent in 1975, declaring that all hydrocarbons "belong to the inalienable and imprescriptible patrimony of the State." In addition, the size of Texaco's exploration area was cut. Texaco asked for compensation, but was refused by the military-based government, which stated that payment was "inconsistent with the petroleum policy of the 'Nationalistic and Revolutionary Government of the Armed Forces.'"

Ignoring many other legal squabbles that help make this story a non-hydrocarbon gusher for lawyers, Texaco was sued in 1993 in federal court in New York by communities in Ecuador that claimed that contamination killed many people, sickened more, and caused massive environmental damage in the Amazon Basin. After Texaco was merged into Chevron in 2001, a federal appeals court agreed that the case should be tried in Ecuador. The case bounced around as Chevron and Ecuador squabbled over where and how to deal with the matter.

Finally, in 2009, Chevron forced arbitration. It did this based on the Bilateral Investment Treaty (BIT) between the United States and Ecuador that promised to honor arbitration clauses in contracts. Chevron argued that Ecuador had agreed to a release from liability years before when Texaco funded environmental remediation projects. Ecuador denied that position and pressed ahead in local court in Ecuador. Chevron protested, contending that the court was a stooge of the government and that, in any event, arbitration was required.

Contemporaneously, Ecuador had sued in U.S. court to stop the BIT arbitration. A federal court denied the request to stay arbitration. That view was upheld by the Second Circuit Court of Appeals (*Republic of Ecuador v. Chevron*, 2011), which found arbitration as consistent with U.S. policy favoring arbitration—especially one based on a bilateral treaty between nations.

This case gets even messier with Chevron suing experts and journalists for conspiring with the Ecuador plaintiffs while that litigation was in process. Filmmaker Joseph Berlinger was ordered by the Second Circuit to let Chevron see all footage from the "journalistic investigation" that was used in the making of a documentary called "Crude." Berlinger's claim of journalistic privilege did not carry the day. Similarly, over in the Third Circuit, Chevron prevailed in its request that defendants must produce work products (200,000 pages and 63,000 chemical samples) of "environmental consultants" who worked for the Ecuadoran plaintiffs. Chevron claims their behavior could violate criminal fraud statutes.

Self-proclaimed environmental authority Robert Redford wrote "The Filmmaker as David Against Chevron's Goliath" for the Natural Resources Defense Council's *OnEarth Magazine*. He also promoted the documentary that David (a.k.a. Berlinger) made about the Chevron matter at his Sundance Film Festival. Environmental "justice" for Goliath Chevron soon followed in Ecuador court. U.S. courts appear to have another view of the matter.

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