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A TALE OF TWO RIVERS

Carol M. Rose*

THE GREEN CATHEDRAL: SUSTAINABLE DEVELOPMENT OF AMAZONIA. By *Juan de Onis*. New York: Oxford University Press. 1992. Pp. xiv, 280. \$24.95.

NATURE INCORPORATED: INDUSTRIALIZATION AND THE WATERS OF NEW ENGLAND. By *Theodore Steinberg*. New York: Cambridge University Press. 1991. Pp. xvi, 284. \$34.50.

From the titles of these books, you might not guess that they are both about rivers. The first, not surprisingly, is about the Amazon. The second is about the Merrimack.

The *what?* Yes, that's right, the Merrimack, and an important river it was, too, in its day. Theodore Steinberg's¹ fascinating new book is one of a growing number of environmental histories, following the trail marked out in such wonderful studies as William Cronon's *Changes in the Land*² about the New England colonies' evolving environment, or Arthur McEvoy's *The Fisherman's Problem*³ on the succession of fishing ecologies of California. In the Merrimack, Steinberg has located exactly the right river to take up the environmental issues lurking behind early nineteenth-century industrial development.

For infrastructure fans like this reviewer, *Nature Incorporated* will be a tremendously exciting book, full of news about such things as flashboards and fishladders and water company organization. Even to less fervid devourers of this kind of information, the book will clearly send a message about why the Merrimack is still important: it provides an objective lesson on what can happen to the surrounding environment when people set out to develop just one natural resource and do not think about the others. In the case of the Merrimack, that resource was water power.

Most of Steinberg's book concerns the way the Merrimack was effectively colonized by a group of New England entrepreneurs known collectively as Boston Associates, who were primarily interested in the

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1. Theodore Steinberg is Professor of History at University of Michigan.

2. WILLIAM CRONON, *CHANGES IN THE LAND: INDIANS, COLONISTS, AND THE ECOLOGY OF NEW ENGLAND* (1983).

3. ARTHUR F. MCEVOY, *THE FISHERMAN'S PROBLEM: ECOLOGY AND LAW IN THE CALIFORNIA FISHERIES, 1850-1980* (1986).

river's ability to supply power to textile mills. They first learned a few lessons from the early industrialization along the Charles River, in what is now the Boston suburb of Waltham. Then, in the 1820s they moved north to the Merrimack, embarking on the ambitious project that would eventually become a complex network of dams, canals, and mills at Lowell, Massachusetts (pp. 59-69). With Lowell well under way, they moved upstream on the Merrimack to Manchester, New Hampshire, and then downstream to Lawrence, Massachusetts, where their affiliates built still more mills and more massive river "improvements" (pp. 82-84). Finally, recognizing the Merrimack mills' vulnerability to potential disruptions on the waters upstream, in the 1840s and the following years they and their affiliated water companies gradually took over the key points along the river all the way to its sources in New Hampshire, building dams to store water and hence power for the downstream operations (pp. 107-13). The result of all these waterworks was a controlled flow from top to bottom, from the Merrimack's mountain headwaters down to the sea, sufficiently rationalized so that the Boston Associates and their affiliates could precisely specify the units of water power that they used themselves, or that they leased to other mills along the route (pp. 85-86).

But there were some other results as well, results that figured rather less prominently in the Boston Associates' balance sheets: their dams and mills flooded pasturage lands (pp. 114-15, 126); decimated fish populations (pp. 172-74); slowed logging transport (p. 121); attracted urban growth that polluted the river waters (pp. 232-39); and, incidentally, fueled the fires of local resentment, particularly among the New Hampshire residents far upstream from the Boston Associates' big Massachusetts textile factories (pp. 99-102).

What was the reason for this heedless devastation of environmental resources? Though he doesn't beat the reader to death with these matters, Steinberg alludes constantly to a major theme, accompanied by a minor theme. The major theme is that the Merrimack's developers adopted an aggressively instrumental attitude about nature,⁴ an attitude that by the end of the century had been adopted even by the opponents to their river projects (p. 267). The minor (and related) theme is that all this instrumentalism was encapsulated in too great a reliance on private property.⁵

Let me say this again: I loved this book, as only one who pours over old pictures of milldams and waterwheels can love such a book. But I do not think that Steinberg's explanatory themes advance his otherwise entirely absorbing account, and I wish he had let them go, so to speak, as water over the dam. I am going to turn to those themes, and what I regard as their flaws, with the caveat that readers

4. *E.g.*, pp. 75, 203, 245.

5. *E.g.*, pp. 168, 196, 203.

should not be deterred from reading this fine book by the nitpicking that follows.

To start with the major theme, all that aggressive instrumentalism: well, who *wasn't* instrumental? Steinberg begins his narrative well after various settlers had already headed up the Merrimack. Who among them had thought about nature as a *Ding an sich*? Nobody, that's who.

Before the dam builders were the loggers and farmers. Forget about the loggers; their environmental lapses make them too easy a target. How about the farmers? Well, farms may look nice and green but, as our contemporaries in Brazil are learning right now (of which more shortly), farmers are not necessarily the friends of the environment. In fact, from the point of view of the native flora and fauna, farmers might as well have turned Massachusetts and New Hampshire — and now Brazil — into a big parking lot. Farmers chop down trees. They disrupt water flows. They plow up the soil and let it blow away as dust or run off into the rivers, where it kills both plant and animal marine life. They sow nonnative plants that escape and grow like crazy in the absence of natural predators. They bring in exotic animals like pigs, who root around and destroy what is left of the native habitat. Then, for fun, they go hunting and blow away any remaining “varmints” like wild turkeys, wolves, foxes, and bears.

Yes, yes, I exaggerate. But consider an example: in wetlands preservation, a modern ecological icon, farmers are not the environmental good guys. They line up alongside the condominium developers, oil developers, and the old Army Corps of Engineers as diggers, plowers-under, and general shock troops of ecological sterility.⁶ Or consider another example: in states that care about prairie restoration, the sites for new prairies may well be located on places with names like Shoe Factory Road,⁷ and they may take their native grass seeds from — guess what — old industrial locations, rather like the ones that Steinberg discusses. Some of those places went from boom to bust without ever getting around to plowing under the native vegetation — unlike their farmer neighbors, who could not wait to bust that sod.⁸

So much for farmers. Who was there before the farmers? What about the Native Americans? Well, a certain cheerful practicality is starting to filter into our picture of the environmental consciousness of

6. See, e.g., Frank Graham Jr., *Of Broccoli and Marshes*, AUDUBON, July 1990, at 102-06 (mentioning and showing pictures of all these parties' activities, though the Army Corps now is trying to “get religion” on the environmental front).

7. See Stevenson Swanson, *Receding Prairie Gets Human Reseeding*, CHI. TRIB., Sept. 17, 1989, § 2, at 1, 5 (discussing “Shoe Factory Road” prairie restoration).

8. See, e.g., Wayne Baker, *Why Not Spend a Day Restoring a Prairie*, CHI. TRIB., Sept. 9, 1990, § 18, at 5 (West Chicago prairie project located in midst of industrial section, on land formerly belonging to railroad; land contains over 500 plant species along with butterflies, birds, etc., unlike most land, which was plowed under for farms in late 1800s).

these indigenous peoples. From other environmental historians, we know that Eastern Native Americans did some farming, though not so intensively as the European settlers.⁹ We also know that they used fire extensively to manage forest and grassland growth, particularly to attract wildlife.¹⁰ Out West they started fires among the tall evergreens just to watch the trees explode, like giant natural fireworks.¹¹ We can take a good guess that, like other indigenous peoples, they exterminated a number of animal species, particularly the large, dangerous predators.¹² Under the circumstances, this must have seemed like the reasonable thing to do, just as it did to more modern Bengali forest-dwellers, who had lots of experience with elephants that trampled their crops and man-eating tigers that occasionally ripped down huts to get at the nice juicy people inside.¹³ I daresay, dear reader, that after following the trail of clothing shreds, bones, and blood to retrieve the carcass of your spouse or your child, you too would have exterminated those animals, just as soon as you could.

In any event, we know that American indigenous peoples, however comfortably they settled into some kind of equilibrium with the surrounding wildlife, and however many truly poetic emotions they expressed about the land and its creatures,¹⁴ had some pretty unsentimental and instrumental attitudes about nature too. Some seemed quite willing to turn "nature" to commercial purposes — for instance, to hunt beaver for the European fur trade, in exchange for firearms, cutting implements, and other objects they thought useful.¹⁵ Out in California, indigenous tribes fell into heartbreaking and disastrous disputes with miners and other settlers about the water runoff, because the runoff was damaging the fish populations that the Califor-

9. CRONON, *supra* note 2, at 43, 48.

10. STEPHEN J. PYNE, *FIRE IN AMERICA: A CULTURAL HISTORY OF WILDLAND AND RURAL FIRE* 74-76 (1982). Pyne gives many examples of other Indian uses of fires, including broadcast fires to get rid of flies and mosquitos. *Id.* at 71-72; see also ALBERT E. COWDREY, *THIS LAND, THIS SOUTH: AN ENVIRONMENTAL HISTORY* 14-15 (1983) (describing Eastern Native American use of fire to open landscape for deer and to encourage some trees rather than others); CRONON, *supra* note 2, at 49-51 (same).

11. PYNE, *supra* note 10, at 71-72.

12. COWDREY, *supra* note 10, at 12-13.

13. See Paul Greenough, *Naturae Ferae: Historical Notes on the Management of Wild Animals in Colonial and Post-colonial South Asia*, Draft Paper Delivered at the Conference on Common Property, Collective Action and Ecology, The Indian Institute of Science Center for Ecological Studies in Bangalore, India, at 7-12, 18-19, 21-29 (Aug. 19-20, 1991) (copy on file with author).

14. For an attractive (if somewhat romantic) sample, see T.C. McLuhan, *TOUCH THE EARTH* (1971).

15. See Toby Morantz, *The Fur Trade and the Cree of James Bay*, in *OLD TRAILS AND NEW DIRECTIONS: PAPERS OF THE THIRD NORTH AMERICAN FUR TRADE CONFERENCE* 39, 42 (1980) (chart of goods traded in exchange for beaver, early eighteenth century). Morantz disputes the view that the Cree became dependent on the fur trade and instead depicts the inland groups as controlling the terms of trade with Europeans. *Id.* at 55-57.

nia natives intended to eat.¹⁶ Did they act from love of nature? Or was it love of having something to eat? Are those really distinguishable? The more important point, as Arthur McEvoy's book suggests, is that the California natives could in a certain sense be instrumental about fish, and still act in ways that were compatible with the preservation of this important environmental resource.¹⁷ That combination is what should make them interesting to modern environmentalists.

So who isn't instrumental? And what can instrumentalism possibly explain? Maybe the Boston Associates were "aggressively" instrumental but, to some degree, that was just a matter of an advancing technological capacity that enhanced their singlemindedness, in which case we should be talking about technology and singlemindedness, not "instrumentalism." Instrumentalism is extremely widespread, and it is not just a human phenomenon; if you want to see some really aggressive instrumentalism, just watch a video of the way a bear hunts for fish. I say watch a video, because I don't want that bear to get instrumental about *you*.

From one environmental perspective, the trick is not to get rid of instrumentalism, a hopeless task under most circumstances. Rather, the goal is to get people to understand instrumentalism in a wider context. In other words, the task is to convince people to adhere to what used to be called "self-interest rightly understood," which in an environmental context is now fashionably called "sustainable" resource use. This concept denotes a kind of enlightened instrumentalism; it requires one to think about adopting less intrusive and singleminded behavior with respect to the surrounding lands and waters, in order to preserve their various forms of productivity, including their contribution to an enhanced quality of life.

Which brings me to the second theme that Steinberg at least half-heartedly sounds: that the Merrimack development showed the inappropriateness of using private property (an instrument for the gratification of self-interest) as an institution of resource management. But again, from one very widely held environmental perspective, the problem was not too much property. The problem was not enough property.

A number of environmental scholars, including historians like McEvoy, have pointed out that environmental problems are "commons" problems — scenarios in which nobody owns a particular resource, and everybody consequently races to get the most first.¹⁸ A standard solution to the commons problems is to reduce the resource in question to private property. When people know who has what,

16. McEvoy, *supra* note 3, at 53-58.

17. *Id.* at 48-49.

18. *Id.* at 11-12; see also WILLIAM OPHULS, *ECOLOGY AND THE POLITICS OF SCARCITY* 145-47 (1977).

they will be careful about the things they own, and they will trade with other owners instead of grabbing and fighting and being intrusive. But some resources — like the oceans or the air — are not easily reduced to individual property; they are too big or have too many interacting parts. Dividing those resources into individual bits will not work out well, because the management of each bit may affect the others, through what the economists call “externalities” (another name for insufficiently defined property rights).¹⁹ Maybe that is what Steinberg has in mind when he talks of the inadequacies of “private” property (pp. 168, 196, 203).

But private property does not have to be *individual* property. A number of resource scholars of late, like Elinor Ostrom, have been making the point quite strenuously that private ordering can include communal property. In fact, they say, the world has known quite a few joint property arrangements designed to manage large-scale resources, some of which are very sophisticated arrangements and well attuned to the preservation of the resources in question.²⁰ Even when a resource is open to the public at large, the forms and intensity of public access can be managed, in which case the resource is properly called “public property,” as opposed to something that is simply up for grabs.²¹

Big interactive resources like river basins require something like this — that is, a larger-scale management of their interactive parts. In a sense, that was the genius of the Boston Associates, as Steinberg so fascinatingly illustrates. Limited though their vision may have been, they realized that the Merrimack’s water power had to be managed as a whole, and that they could not really be secure in the downstream Massachusetts mills unless they controlled the flow from the upstream New Hampshire lakes. What is more, the Boston Associates figured out how to do this — how to bring the entire water power of the river under the management of a single interlocking directorate by treating the whole Merrimack as one big property.²²

To be sure, the Boston Associates focused on only one aspect of

19. See Steven J. Cheung, *The Structure of a Contract and the Theory of a Non-Exclusive Resource*, 13 J.L. & ECON. 49, 49-54 (1970).

20. See generally ELINOR OSTROM, *GOVERNING THE COMMONS* (1990). Ostrom, like many writing in this area, carefully distinguished “open access” common pool resources from those with limited access, in order to make the point that a “commons” is not necessarily “tragic,” but can also be managed if access is limited. *Id.* at 48; see also S.V. Ciriacy-Wantrup & Richard C. Bishop, “Common Property” as a Concept in Natural Resources Policy, 15 NAT. RESOURCES J. 713 (1975).

21. See Carol Rose, *The Comedy of the Commons: Custom, Commerce and Inherently Public Property*, 53 U. CHI. L. REV. 711, 742-47 (1986) (arguing that public property can be managed, even by informal custom).

22. The courts also realized this in developing a concept of “reasonable use” to accommodate riparian owners along a whole stream. See Carol M. Rose, *Energy and Efficiency in the Realignment of Common-Law Property Rights*, 19 J. LEGAL STUD. 261, 266-67 (1990).

the river, that is, its usefulness for power; they were more or less indifferent to its other uses.²³ Nevertheless, they did have to pay attention to at least some of the other uses of the river. Why? Because some other people had *property rights* to use the river in other ways. In order to overcome the property rights belonging to others, the Boston Associates had to spend money. If their projects flooded lands, the Associates had to buy flooding easements or buy the land outright, and when they failed to do so, they faced litigation, damage judgments, and (in New Hampshire) self-help remedies by irate dam busters (pp. 148-50). They also had to buy out fishing rights or build gadgetry to let the fish get over the dams (pp. 174-75). They had to pay for wharf extensions when their dam releases disrupted boating facilities (p. 265). And so on and so on. All these payments and efforts had to be made to extinguish property rights, both private and public. Those rights, in turn, made water power more expensive to develop and forced the Boston Associates, in effect, to evaluate the worth of their own projects against other actual and potential uses of the river.

In short, property rights made the Boston Associates think twice before mucking about with at least a few aspects of the environment, paltry as those impediments now seem. The enormous vacuum in property rights, both private and public, when combined with the insufficient protection of existing rights, allowed these industrialists to decimate the environment without a care in the world. What they never (or at most sporadically) bothered to take into account were the public fishing interests that went largely undefended, the water pollution that no one really quite understood as damaging to anyone, and the scenery that no one thought of as belonging to anyone at all, whether individually, communally, or as members of the public at large.

That was the problem: what nobody owns gets taken "for free." This will likely happen when "instrumentalists" encounter valuable but unowned resources: it is the stage for the tragedy of the commons, the play that had such a long run on the unowned aspects of the Merrimack's environment. The tragedy is especially notable when contrasted with the aspects of the river that did get treated as property, particularly the water power that the Boston Associates learned to measure and parcel out to purchasers. That "propertized" aspect of the river was treated with deliberate care and with the thrifty husbanding of resources that all too easily illustrates the classical economists' tribute to property: property induces prudence, planning, investment, and attention to resources, because property lets the own-

23. Steinberg makes clear, however, that a secondary purpose for riverine mill location was waste disposal — a use that resulted in serious pollution. See pp. 211-16.

ers bear the costs and take the gains from their decisions.²⁴

Interestingly enough, the end of the Merrimack's water power story represented a reversion to indigenous resource management practice. In many parts of the world, indigenous peoples manage resources in a very simple way: they move on when the desired resource becomes scarce and requires more expenditure of effort so that other resource-producing grounds start to look relatively more attractive.²⁵ Much the same scenario occurred with industrial power sources. By the later years of the nineteenth century, the Merrimack's most easily developed and accessible mill sites had already been developed. Then what? Why, the industrialists shifted to another energy source — anthracite coal, newly developed in the area around Scranton, Pennsylvania. By the 1880s, only a few years after the Boston Associates had finally consolidated their water control in the New Hampshire headwaters, coal-burning steam engines began to displace water as an energy source (pp. 244-45).

Unlike water power, coal-powered steam engines could be used just about anywhere, and that alone made them attractive. Indeed, given what Steinberg teaches us about the intrusiveness of water power facilities, coal may have even seemed comparatively benign with respect to the environment, though perhaps no one should bet on this. In any event, any such hopes would have occurred a few years before the ground started to collapse in and around Scranton, as the underlying anthracite mines caved in below, sucking down residences, schools, graveyards, and other facilities in a kind of protracted horror show whose legal culmination arrived in 1922 in *Pennsylvania Coal Co. v. Mahon*.²⁶

This depicts a recurring pattern with resource use: we use a resource until it is exhausted, or at least has become relatively expensive, and then we move along to the next.²⁷ That might be fair enough if the whole story was about resources that we bought. It often happens, though, that by the time we move on, not only have we depleted the resource that we were paying for, but we may have also completely

24. Cf. JEREMY BENTHAM, *Principles of the Civil Code*, in *THE THEORY OF LEGISLATION* pt. 1, chs. 7-9 (C.K. Ogden ed., 1931).

25. See, e.g., CRONON, *supra* note 2, at 48-49 (New England Indians farmed same areas until the ground became infertile, then moved; they also moved on when wood for fires became scarce).

26. 260 U.S. 393 (1922). The case held unconstitutional, as a "taking" of property, Pennsylvania's effort to limit mining companies from undermining various surface uses, even when the mining companies had purchased or retained the right to do so. The effects of subsidence are graphically depicted in some of the case's briefs, particularly the Brief of Defendants in Error at 6-8, and Brief on Behalf of the City of Scranton at 2-5; the latter has photographs of some dramatic surface collapses. For another contemporary account, see George H. Cushing, *Near-Doomed Cities*, 19 *TECHNICAL WORLD MAG.* 660 (1913), describing the rabbit warren of coal shafts under the surface of Scranton, threatening the city with surface collapse.

27. See generally Stephen F. Williams, *Running Out: The Problem of Exhaustible Resources*, 7 *J. LEGAL STUD.* 165 (1978); see *id.* at 181-85, 197 for some of the ethical considerations.

wasted some other related resources that we *didn't* have to pay for. These attached but unowned "commons" resources are likely to reach a point of exhaustion much more quickly, and much more devastatingly, because nobody even has bothered to think about the benefits of moderation or regeneration with respect to them. If these resources are unowned and open to everyone, nobody directly pays the costs of overuse, and nobody directly reaps the benefits from conservation; thus, nobody is very likely to bother about them. To be sure, the Merrimack mills moved from water power to coal, but not until the owners had pondered the relative costs of these alternative sources of power. They never even had to think about the resources that nobody owned, like scenery or water purity. And so they wasted them.

Nowadays, people don't pay nearly as much attention to the Merrimack as they did back in the days when Lowell could be compared to England's then-dominant industrial city of Manchester.²⁸ But lots of people are thinking about the Amazon, which looks like another environmental disaster waiting to happen, and for very much the same reasons. Juan de Onis' *Green Cathedral*²⁹ kicks us straight into the later years of the twentieth century, but he too is telling a "commons" story, albeit a more complicated one, as befits one of the greatest watersheds of the world.

De Onis' story is not so clearly focused on the river system's water power, although dams and water power do play a significant role in the book.³⁰ De Onis devotes much more time to a variety of other watershed resources, not the least of which are contained in the great rainforests, with their prodigious flora and fauna. Perhaps because of the huge reach and variety of this watershed, de Onis' book itself has a riverine quality, as the subjects tumble out and dissolve into one another. Two or three topics often fall over each other in the same paragraph; certain organizations and firms pop up all over the book without cross-references; and side remarks digress to such nifty trivia as the love life of a former president's aide (p. 178) or the movie royalties paid to an Amazon guerilla's widow (p. 229). It is all very interesting, but I wish the effort had gone into a few more good maps, like Steinberg's very helpful ones.

Through this rush, de Onis' book strongly suggests that in Amazonia, too, certain matters ought to be treated as one great big property, since events in the rainforest have highly interactive effects on the world's biodiversity and carbon dioxide levels. And, once

28. COTTON WAS KING. A HISTORY OF LOWELL, MASSACHUSETTS 90, 117, 239 (Arthur L. Eno, Jr. ed., 1976). The comparison often favored Lowell, since it had less slumlike conditions for workers.

29. Juan de Onis is a former foreign correspondent for the New York Times who undertook an intensive two-year study of the Amazon in 1988.

30. *E.g.*, p. 123.

again, locating an appropriate manager for such a great big property is not so easy. In the meantime, Amazonia is beset by hordes.

Unlike Steinberg, de Onis exhibits no romantic notions about nature as an entity unto itself, separate from the opportunists who poke around in it. His Amazonia is full of people, some indigenous, and many more newcomers, almost all recognizably instrumentalists. The oldtimers are native peoples and, somewhat more recently, rubber tappers — all users of the old-growth rainforest and its products.³¹ The newcomers have rather different ideas: they include miners tearing up the forest, energy firms looking for oil in it, farmers and ranchers clearing it by slash and burn, and publicly supported entrepreneurs building dams (yes, dams) across its waterways. Needless to say, a lot of these newcomers (and even some of the indigenous peoples (p. 134)) are busily reenacting the tragedy of the commons — a result that is particularly likely to occur, as de Onis quite correctly points out, under the too-frequent conditions of weak social order and violence.³² Nothing works better than the threat of violence to usher in the regime of *saive qui peut*, where the most rational plan is to grab and run before someone else outrabs and outruns you.

What, then, can induce all these tragedians to work together toward some common and conservationist approach to the Amazon's gigantic interactive resources? In a variety of ways, de Onis' book implies two guiding principles. First, to save Amazonia's resources, the region needs social organization, so its resources can be managed in a coordinated way. Second, and just as important, everybody has to get a piece of the action — that is to say, all the Amazon's vastly different kinds of people have to get some individual or community properties, in order to give them a stake in maintaining the common program, rather than sabotaging it by individual grab-and-run actions.

So far, so good; this suggests a common management regime to handle this great, big, interactive area as if it were a single property, while assuaging the huge numbers of people who might be in a position to turn it back into a quickly wasted commons. The next question is, who is in a position to deliver such a social system? Who or what can articulate the many and diverse interests into a larger enterprise of sustainable development, in what de Onis dubs a "new frontier"? One might think that the only management agency large enough for the job is government, but de Onis is quite contemptuous of many direct governmental institutions in the Amazon basin (pp. 191-92). Instead,

31. De Onis is rather skeptical of some of the efforts to treat these "peoples of the forests" — particularly the rubber tappers — as privileged holders of rights on "extractive reserves." See pp. 224-29, 236-38.

32. Pp. 19-20. A recent example is playing out in Cambodia as this review is written. See Philip Shenon, *Now It's the Jungle That the Khmer Rouge Decimates*, N.Y. TIMES, Feb. 7, 1993, § 4, at 4 (describing savaging of forests, topsoil degradation, through logging and gem mining in rebel-held areas).

what he suggests, interestingly enough, is that a leading role be taken on by the big privately or publicly supported entrepreneurs — that is, the Amazon's versions of the Merrimack's Boston Associates.³³

These major entrepreneurial organizations already have involved themselves in mineral extraction, hydroelectric development, and forestry products. De Onis argues that they have been much more conservationist than their teeming, small-scale, individual counterparts,³⁴ particularly the extraordinarily destructive wildcat miners (pp. 67-69). They have also been much more ready to entertain such efforts as reforestation on their properties, according to de Onis; he spends lots of time talking about the way the major state mining enterprise replanted eucalyptus trees when it ran out of other trees for cellulose products (pp. 166-69). Besides, he says, these major firms are the only ones capable of generating the social organization needed for wide-reaching efforts (p. 163).

One has to be a bit skeptical of all this, for reasons that should be clear from a little reflection on the Boston Associates and the Merrimack. First, when it comes to environmental resources that they do not have to pay for, there is no reason to think that these large-scale Amazonian enterprisers are much more broadminded than the Boston Associates used to be. As de Onis observes, a reforestation project doesn't sound all that attractive when one can cut down the existing trees for nothing (p. 99). Second, it must give one pause to consider the conservation efforts that these firms have in fact undertaken. So far, for example, eucalyptus trees seem to be a major element in reforestation (pp. 199-200) but, quite aside from the inability of these trees to replace the habitat diversity of the old growth, they are a very hardy brand of exotic. Exotics have a distressing habit of crowding out native vegetation. Just ask Californians about eucalyptus trees. While you are at it, ask South Carolinians about the *kudzu* vine, another exotic plant that, as de Onis approvingly notes, some state agronomy programs have introduced among Amazon ranchers (pp. 211-13).

By the way, these exotic replantings echo some of the nineteenth-century efforts along the Merrimack that Steinberg describes, particularly those relating to fish replacement. On the Merrimack, the new industrial mill dams severely disrupted fish migrations and reproduction, and New Englanders tried to restock the waters with hatchery-bred varieties. We now know, unfortunately, that hatchery fish can

33. Lest it be forgotten, the Merrimack mills also had public support, at least in Massachusetts, in the form of the "mill acts" that effectively gave private eminent domain powers to the mills to flood their upstream neighbors on payment of damages. See Steinberg, pp. 31-32. New Hampshire had no such mill act for most of the nineteenth century (pp. 148-49), and they were controversial in other states as well, insofar as they assisted private uses of waterpower. See Rose, *supra* note 22, at 277-78 & n.57.

34. *E.g.*, pp. 137-43.

have devastating effects on the gene pool of their wild relatives.³⁵ The point is not that such second-best efforts should not be undertaken in all circumstances; it is just that these moves, like other optimistic technofixes, may have consequences that no one can anticipate.³⁶

Finally, and perhaps most importantly, even these big Amazonian enterprises scarcely have a prayer of achieving any all-encompassing unitary management over the gigantic Amazon ecosystem. Not one of them could dream of the kind of control over even a single aspect of Amazonia that the Boston Associates had over one aspect of the Merrimack, that is, the river's power. Moreover, even on de Onis' "new frontier" in the Amazon, the competing enterprises aren't all big businesses. Despite the role he envisions for large enterprises, he insists (and probably quite rightly) that nothing is going to work unless there is a place for nongovernmental organizations, foresters' associations, agriculturalists, indigenous groups, and so on.³⁷ All of these groups and the interests behind them ought to be able to make a living out of the Amazon and its forests — if only, if only, *if only* everyone can be brought into a common picture. But to arrive at that happy state, they are going to need coordination by something even bigger than the large entrepreneurial organizations.

No doubt this is why de Onis keeps up a steady drumbeat on the subject of "zoning." The word *zoning* appears all over the place in this book, and it hints at a kind of looming master plan that will allocate private efforts to the right places, all to achieve sustainable and environmentally sound development. Unfortunately, de Onis does not say much about what is going to go into the different zones, or how they are going to get established, or by whom, or who is going to get to decide about rezoning in the future.

These lapses will cause a general rolling of eyes among some land use experts. Zoning in the United States has been a major source of governmental corruption,³⁸ though perhaps this is not directly *à propos* since American zoning is largely a local affair rather than a centralized one. Nevertheless, the United States does have one state with a history of highly centralized zoning, namely Hawaii, where every square foot is in some state-mandated land use district.³⁹ Now, Hawaii is a diverse place, but not so diverse as the Amazonia that de Onis describes; it has the additional advantages of much smaller size and a

35. See Michael L. Goodman, *Preserving the Genetic Diversity of Salmonid Stocks: A Call for Federal Regulation of Hatchery Programs*, 20 ENVTL. L. 111, 123-45 (1990).

36. For more on technological optimism, see James E. Krier & Clayton P. Gillette, *The Un-easy Case for Technological Optimism*, 84 MICH. L. REV. 405 (1985).

37. *E.g.*, pp. 214, 219-27.

38. See ROBERT C. ELLICKSON & A. DAN TARLOCK, *LAND USE CONTROLS* 244-47 (1981), and sources cited therein.

39. DAVID L. CALLIES, *REGULATING PARADISE: LAND USE CONTROLS IN HAWAII* 1, 3, 6-10 (1984).

longer history of centralized administration. Moreover, given de Onis' own scathing criticisms of governmental actions in the Amazon basin, including the utterly dismal experience of the widely ransacked rainforest reserve districts (pp. 155, 183), it seems as if Hawaii's land use regime may justifiably enjoy more public confidence than Brazil's.

But even with these advantages, the various decisionmakers in Hawaii's zoning system are under constant pressure to change the uses allowed in given zones, or to alter the boundaries themselves, or to open up the process to public observation, or to add more rigorous decisionmaking procedures, or to take greater account of the interests of this group or that.⁴⁰ If Hawaii has problems with its version of centralized zoning, the problems entailed in zoning Amazonia must boggle the mind. One cannot but think that de Onis has reached a pretty desperate state if he is willing to fall back on a largely undescribed "zoning" as the coordinating mechanism for the new frontier in the Green Cathedral — particularly given his descriptions of governmental bungling in other areas.

None of this sounds terribly optimistic for the Amazon, perhaps even less so now than when de Onis wrote, given the political uncertainties attending Brazil's ouster of President Collor. Indeed, one might guess that the Amazon's chances for environmental conservation are rather weaker than the Merrimack's were over a century ago.

Are there any reasons for hope? Well, perhaps a few. One is the character of those who protest environmental decimation. Along Steinberg's Merrimack over a hundred years ago, the people we might now call NIMBYs sound like genuine crazies. I mean, real nut cases, like the Boston Associates' notorious stalker, James Worster, who would stop at nothing to blow up one of their dams (Steinberg, pp. 128-31). Evidently, environmental protest was not an activity that sensible people even contemplated in those days. Nowadays, on the other hand, environmental protest has at least attained intellectual respectability — it is an activity that sensible people can think about, engage in, and get some sympathy for. Brazil's indigenous peoples, after all, have been able to line up some impressive international support for their efforts to remain in a more or less intact rainforest (p. 155).

And that's another thing: a wider community has now taken an interest in preserving the Amazon's ecology, a point symbolized by the 1992 Rio Conference. The Amazonian rainforest has effects that go far beyond the merely local; some say there is a worldwide interest in its hugely diverse biota, and others argue that its vegetation creates a "carbon sink," helping to prevent the overheating of the global atmosphere. Moreover, modern technologies such as remote satellite sens-

40. *Id.* at 36-41.

ing can help everyone keep abreast of events in the rain forest (pp. 94-95), so that alterations in its conditions are widely and quickly knowable. Although the rest of the world may not be paying *enough* attention, at least it is paying *some*. Perhaps most important, the rest of the world is thinking about shelling out some bucks for conservation in Amazonia and, more particularly, for creating entitlements that encourage local people to preserve the Amazon's resources, with all their potentially massive global repercussions.⁴¹ It's about time, too; this is the sort of endeavor that property regimes should help us undertake.

Which brings me back to the title. I called this review *A Tale of Two Rivers*, instead of "Tales" because, in a certain sense, both rivers run through a single tale. It is the same old story about the tragedy of the commons. Economic theorists say that the way to stop telling this story, over and over again, is to devise property solutions to resource uses. To be sure, new property solutions may require changes of consciousness and other such high-falutin' epistemological events, but those do occur from time to time,⁴² and they should be quite compatible with the more highly developed property regimes called for by environmental protection. Both these books suggest, at least to this reviewer, that environmental challenges are intellectual challenges of a quite specific sort. That is, they are challenges to reconsider the ways that all of us organize our thinking about property regimes, both private and public, so as to advance our true interests with respect to the world around us. And if this takes a change of consciousness — well, these books, like the others in the new environmental history, are two good places to start.

41. It may be symptomatic that two of the four articles in a recent newsletter of the Washington think tank, Resources for the Future, deal with property-based solutions to rainforest preservation. See R. David Simpson & Roger A. Sedjo, *Contracts for Transferring Rights to Indigenous Genetic Resources*, RESOURCES (Resources for the Future, Wash., D.C.), Fall 1992, at 1; and Roger A. Sedjo, *A Global Forestry Initiative*, RESOURCES (Resources for the Future, Wash., D.C.), Fall 1992, at 16. A third article in this issue, interestingly enough, deals with a modern version of one of the Merrimack problems, fish depopulation from dams: Kris Wernstedt et al., *Evaluating Alternatives for Increasing Fish Stocks in the Columbia River Basin*, RESOURCES (Resources for the Future, Wash., D.C.), Fall 1992, at 10.

42. See Carol M. Rose, *Property as Storytelling: Perspectives from Game Theory, Narrative Theory, Feminist Theory*, 2 YALE J.L. & HUMAN. 37, 55-57 (1990).