

LIBERTY, PROPERTY, ENVIRONMENTALISM

BY CAROL M. ROSE

I. INTRODUCTION

In the conventional wisdom, environment and property are opposites. “The environment” consists of a kind of supposedly natural background of resources that are not subject to individual property rights, usually because they are so large or diffuse or distant. The atmosphere, the oceans, groundwater aquifers, remote forests and the wildlife that inhabits them—all these resources often carry the label “environmental.” But this label also signifies that they are not owned by any individual, except perhaps metaphorically by “the sovereign,”¹ which in the United States would presumably mean “the people.”

Moreover, another aspect of the conventional wisdom is that the absence of ownership is a great source of trouble for environmental resources: since no one owns them, no one invests in them or protects them from overuse. If any of their attributes become valuable, they have no defenders against the archetypal tragedy of the commons.² The issue is not lack of value. Quite the contrary, environmental resources are of enormous value, even or perhaps especially in their large and diffuse undivided form. The issue is rather that no one can claim exclusive rights—that is to say, property rights—over these resources in their undivided form. The tragedy ensues because individuals slice away claimable bite-sized portions as individual property, until the whole is ruined. Millions of bison kills drove the once fabulously multitudinous herds to collapse. Millions of exhaust pipes can turn the air into an opaque and unbreathable brew. With respect to environmental resources, the usual utilitarian virtues of property—encouragement of effort, planning, investment, and trade—seem to be totally missing, turning environmental resources into scenes of waste, profligacy, and immiseration.

Given this conventional opposition between property and environment, perhaps it is not surprising that much early environmentalism relied very little on ordinary property rights. Instead, most efforts went into governmental measures like the purchase or retention of park areas, and somewhat later into command-and-control legislation specifying

¹ See William Blackstone, *Commentaries on the Laws of England* (1766; Chicago and London: University of Chicago Press, 1979), 2:14–15 (attributing otherwise unowned things to the ownership of the “sovereign”).

² Garrett Hardin, “The Tragedy of the Commons,” *Science* 162, no. 3859 (1968): 1243–48.

required measures for the use of a large array of environmental resources, ranging from catalytic converters on automobiles to double liners on hazardous waste sites to turtle exclusion devices on shrimp trawlers.³

All the more interesting, then, is the turn to property-rights approaches in the current effort to stave off climate change—reputedly the most gigantic environmental problem yet faced by human beings. Cap-and-trade programs are popping up throughout the international discussions of climate-change controls—that is, programs that cap the total allowable output of particular greenhouse gases, divide the allowable total into smaller individual allowances, and then allow the recipients to treat their allowances as tradable property rights. The Europeans have gone as far as anyone down the road to constraints on greenhouse gas emissions, and while they previously rejected cap-and-trade programs of all kinds as immoral trafficking in bad things, they have now developed their own active (if sometimes problematic) trading programs for greenhouse emissions. In the United States, a laggard with respect to greenhouse emission control, virtually all the legislative proposals of late 2007 and early 2008 embraced some version of market-based approaches to controlling greenhouse gases, generally cap-and-trade.⁴ Meanwhile, another form of property-rights approach to environmental protection has grown rapidly both in the United States and in the wider world, namely, conservation easements in private parcels, and conservation reserves orchestrated through nongovernmental environmental groups. The latter in particular may ultimately connect with climate-change initiatives, insofar as forestry protection becomes a larger part of the effort to sequester carbon emissions.⁵

All this property-related activity on the climate-change front raises intriguing questions about the relationship of property rights to environmental protection. Contrary to the conventional view of environmental

³ The first national park was Yellowstone, reserved in 1872. For a brief history of federal park reservations and related wilderness protection in the United States, see George Cameron Coggins, Charles F. Wilkinson, John D. Leshy, and Robert L. Fischman, *Federal Public Land and Resources Law*, 6th ed. (New York: Foundation Press, 2007), 1009–13. For the general pattern of command-and-control legislation in the generation after 1970 and the more recent move to market-oriented regulation, see Carol M. Rose, “Environmental Law Grows Up (More or Less), and What Science Can Do to Help,” *Lewis and Clark Law Journal* 9 (2005): 273–94. For the specifics of turtle exclusion devices (TEDs), for which the United States’ requirements have encountered international opposition on free-trade grounds, see George Cavros, “The Hidden Cost of Free Trade: The Impact of United States World Trade Organization Obligations on United States Environmental Sovereignty,” *ILSA Journal of International and Comparative Law* 9 (2003): 563, 564–65.

⁴ For a summary and analysis of congressional legislative proposals as of late 2007 and some comparisons with European efforts, see Victor B. Flatt, “Taking the Legislative Temperature: Which Federal Climate Change Proposal is ‘Best’?” *Northwestern University Law Review Colloquy* 102 (2007): 123–50.

⁵ See Mashiro Amano and Roger A. Sedjo, “Forest Sequestration: Performance in Selected Countries in the Kyoto Period and the Potential Role of Sequestration in Post-Kyoto Agreements” (2006), <http://www.rff.org/Documents/RFF-Rpt-ForestSequestrationKyoto.pdf>. See also Carol M. Rose, “Big Roads, Big Rights: Varieties of Public Infrastructure and Their Impact on Environmental Resources,” *Arizona Law Review* 50, no. 2 (2008): 409–43.

resources as unowned or even unownable, the new initiatives hope to deploy property rights as a central means by which to conserve these seemingly unmanageable, vulnerable, and valuable resources.

Can property rights help to solve environmental problems after all, especially the one problem that currently looms largest in the world's consciousness, climate change? The answer I put forward in this essay is that property-rights approaches are important and feasible, but that there are many pitfalls that will need to be avoided. Those pitfalls can be observed from our experience with property-rights regimes for much less ambitious subjects—subjects like land, minerals, wild animals, and terrestrial water sources.

II. EVOLUTIONARY STORIES

The “tragedy of the commons” is a pessimistic story, named by the biologist Garrett Hardin in his 1968 essay of that name, but well known to resource economists considerably earlier.⁶ The basic idea is that resources subject to open access—like a grazing field, a fishery, or the atmosphere—present potential users with a miniature cost-benefit calculation. Use of these resources (for grazing, fishing, or pollution storage, respectively) brings the full benefit of the taken portion to the user, while costing that user only a fraction of any damage inflicted on the larger resource, since the cost of the damage is spread out among all the other users. Conversely, investing in the larger resource's maintenance or regeneration imposes the entire investment cost on the user while bringing her only a fraction of the benefit, since she shares the benefits with all the other users. These scenarios give powerful incentives to exploit the resource and to refrain from investing. This is particularly true because the user suspects that all or most other users are making the same calculations. Essentially, the tragedy of the commons is a failure of coordination among players who could do best collectively by cooperating and deploying a modicum of self-restraint, but whose individual motivations are all to consume without restraint. Hardin suggested, and his disciple William Ophuls strongly argued, that the solution to this problem was necessarily either a turn to property rights or to the state, Leviathan.⁷ More manageable and more easily divisible resources like land might be turned into property, but because large and diffuse environmental resources are so resistant to propertization, the upshot seems to be that only Leviathan can manage them. The problem is that property regimes on a smaller scale, and Leviathan on a larger one, do not simply emerge spontaneously; both

⁶ See Hardin, “Tragedy of the Commons.” For an earlier and more precise treatment by a resource economist, see H. Scott Gordon, “The Economic Theory of a Common Property Resource: The Fishery,” *Journal of Political Economy* 62, no. 2 (1954): 124–42.

⁷ William Ophuls, *Ecology and the Politics of Scarcity* (San Francisco: W. H. Freeman, 1977), 147–56.

institutions require coordination, and coordination raises the same “tragic” collective-action issues that appear in the original commons problem.⁸

In the opposite corner from the tragedy of the commons, however, is another widely told and much more optimistic story about property, one that does not go deeply into the coordination or collective-action problem but that nevertheless argues that property rights do emerge as the need for them unfolds. An early teller of this optimistic story was the eighteenth-century legal scholar William Blackstone, who described the supposed origin and evolution of property before laying out the details of English property law in his *Commentaries*.⁹ A much more recent narrator is the economist Harold Demsetz, whose story about the emergence of property rights in the eighteenth-century Canadian fur trade appeared in a now-classic essay.¹⁰

A particularly clear exposition of the optimistic story, together with several interesting examples, can be found in an essay by two other modern economists, Terry Anderson and P. J. Hill. They begin with the premise that property rights are not costless, and hence property is unlikely to develop when it is not worth it to anyone, notably when a given resource is plentiful by comparison to the demand for it. But if a resource becomes more valuable (or the cost drops for defining and maintaining property rights), then the relevant parties will expend the necessary effort to subject the resource to property rights, and indeed to ever more refined versions of property rights. Hence, on the account offered by Anderson and Hill, shortly after the middle of the nineteenth century cattlemen began to run their stock on the open range without many signals of ownership. But as the number of stock (and potential thieves) multiplied, cattlemen began to use roundups and branding as rudimentary methods of signaling and enforcing property rights, and finally turned to fenced-in range, particularly after the invention of barbed wire. All these moves, Anderson and Hill argue, occurred in tandem with the increased value of beef and, thanks to barbed wire, the lower cost of defending property rights.¹¹

Here as in other versions of this much-told optimistic tale, property regimes emerged to meet increasing needs for resource management. It takes very little to project this story onto new-fangled conservation easements, or onto the almost ethereal property rights created for greenhouse gas allotments. Both can be envisioned as simply another ratcheting up of the level of inventiveness and sophistication, as people

⁸ James E. Krier, “The Tragedy of the Commons, Part II,” *Harvard Journal of Law and Public Policy* 15 (1992): 325, 336–38.

⁹ Blackstone, *Commentaries*, 2:2–11.

¹⁰ Harold Demsetz, “Toward a Theory of Property Rights,” *American Economic Review Papers and Proceedings* 57, no. 2 (1967): 347–58.

¹¹ Terry L. Anderson and P. J. Hill, “The Evolution of Property Rights: A Study of the American West,” *Journal of Law and Economics* 18, no. 1 (1975): 163–79.

meet increasingly intense resource challenges with new kinds of property rights and regimes.

III. WHAT CAN GO WRONG?

Tragedy or comedy? Will property stories tend toward a woeful demise or a happy and fruitful ending, for environmental resources as well as others? The pure tragedy story is obviously overly lugubrious. As institutional economists, political scientists, and historians have pointed out repeatedly, people somehow do overcome their collective-action problems to deal with some resource issues—perhaps most dramatically, to manage the very “tragic” example that Hardin used as a metaphor, the medieval agricultural commons, whose common-field governance regimes in fact enjoyed a longevity of almost a thousand years.¹² And the medieval common fields are not the only example. Certain kinds of groups—especially those whose members know one another well and who can observe and interact with one another—often manage to establish effective property regimes, especially when they are working with certain kinds of resources. Robert Ellickson calls these groups “close-knit”; they are likely to be linked together by ties of family, geography, and perhaps religion. All over the world, people in groups like these have organized property regimes to manage common-pool resources, typically in agriculture, grazing, irrigation, fishing, and more modernly, scientific information.¹³

Nonetheless, the comedy or happy-ending story is clearly not always correct either. If it were, we would be unlikely to have evidence of so many decimations of valuable fish and wildlife, desertified former forests and grasslands, polluted waterbodies, or murderously filthy air.¹⁴ No

¹² See Susan Jane Buck Cox, “No Tragedy of the Commons,” *Environmental Ethics* 7 (Spring 1985): 49–61 (illustrating the absence of “tragedy” on the medieval common fields). See also Henry E. Smith, “Semicommon Property Rights and Scattering in the Open Fields,” *Journal of Legal Studies* 29, no. 1 (2000): 131–69 (describing and offering an economic analysis of the elaborate medieval village systems for scattering individual fields and rotating them in and out of common grazing usage). Smith reports that there is some evidence that particular commons originated with individual farmers who agreed to “common” their holdings.

¹³ Robert C. Ellickson, *Order without Law: How Neighbors Settle Disputes* (Cambridge, MA: Harvard University Press, 1991), 177–83. For a variety of examples, see Elinor Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action* (Cambridge: Cambridge University Press, 1990). For specific examples, see Robert McC. Netting, *Balancing on an Alp: Ecological Change and Continuity in a Swiss Mountain Community* (Cambridge and New York: Cambridge University Press, 1981) (community grazing); Paul B. Trawick, *The Struggle for Water in Peru: Comedy and Tragedy in the Andean Commons* (Stanford, CA: Stanford University Press, 2003) (community irrigation); James M. Acheson, *The Lobster Gangs of Maine* (Hanover, NH: University Press of New England, 1988) (fishing community); and Robert P. Merges, “Property Rights Theory and the Commons: The Case of Scientific Research,” *Social Philosophy and Policy* 13, no. 2 (1996): 145–67.

¹⁴ See, e.g., Warren Dean, *With Broadax and Firebrands* (Berkeley, Los Angeles, and London: University of California Press, 1995) (describing the long decimation of the Brazilian Atlan-

effective property regimes emerged in time to manage these valuable resources when they came under pressure.

In assessing the chances for managing environmental resources—and particularly climate change—through property-rights approaches, it is important to consider what can go wrong with the evolution of property rights to meet resource needs. In the following five subsections, I offer a compilation of some of the major things that can go wrong, though the list is certainly not exhaustive. I use examples from property regimes in resources that are simpler and more easily subjected to property rights than greenhouse gases ever will be, on the theory that if things can go wrong with these resources that are more readily and cheaply brought under a property regime, we should be on the lookout for related problems all the more with respect to climate change.

Here is the list:

A. Potential participants may fail to agree on a property regime

There are, of course, a great number of reasons why people never come to agreement at all on a new or revised system of property rights to give order to their use of resources.

(1) The most obvious reason is that while property rights may be private, a modern property *regime* is a public good, either a formal public good like national defense, or an informal one like the cattle roundups that Anderson and Hill describe. A property regime serves an entire collectivity of people who hold and observe property rights. Nothing is lost to the regime by any individual's participation, a feature that much reduces any motivations to exclude others from the regime.¹⁵ By the same token, however, no one has any particular motivation to create the regime in the first place. A property regime requires investment to get underway—often investment in the form of discussions, committee meetings, and cajoling others—but any such investment is little more than a gift to the others who can participate in the

tic Forest); Joshua Hamer, "A Prayer for the Ganges: Across India, Environmentalists Battle a Tide of Troubles to Clean Up a River Revered as the Source of Life," *Smithsonian* 38, no. 8 (November 1, 2007): 74 (describing the extreme pollution of the Ganges); and William Wise, *Killer Smog: The World's Worst Air Pollution Disaster* (Chicago: Rand McNally, 1968) (recounting London's smog attack in the 1930s).

¹⁵ This is not to say that property regimes do not sometimes exclude particular persons from taking ownership roles. Notable historical examples in U.S. society are slaves and married women, neither of which group was allowed to own property in the past. In other societies, there have been classes of the non-elite for whom some resources were *tabu* or *kapu*, as in Hawai'i until some years into the nineteenth century. Absence of ownership rights keeps these persons in dependent or subordinate roles. Nevertheless, even dependent persons are part of the property regime's system of *obligations*—they are not to disrupt the property of others. For property regimes as a source of obligations on all participants, see J. E. Penner, *The Idea of Property in Law* (Oxford and New York: Oxford University Press, 1997), 25–27.

regime without bothering to go to the initial meetings. Under those circumstances, unless some Solon steps up, a property regime may never get off the ground, or if it does, it does so for almost accidental reasons. Anthropologist Bonnie McCay, a student of informal property regimes among fishing communities, has made the very useful observation that these informal property regimes often spring up simply as a means for managing and avoiding disputes,¹⁶ an observation to which I will return. But in the absence of some lasting agreement to solve disputes through a system of mutually recognized entitlements, the relevant parties may simply continue to fight and grab, with the accompanying waste of resources and human efforts.

Similarly, even if people do manage to establish a property regime, they may be unable to change the regime to conform to new situations. Fishermen may agree, for example, on some variation of a first-possession rule favoring the first one to capture an individual fish, or they may develop some other kind of allocation rules for larger and more dangerous marine animals, whose capture requires group efforts. But they may never come up with property rules to manage the stock as a whole. This was a problem for nineteenth-century whalers; the whalers' on-the-spot rules for possessory rights added to the efficiency of the hunt, reducing conflict and encouraging cooperative efforts within small groups, but if anything their localized cooperation exacerbated the never-addressed global problem of declining whale stocks.¹⁷ The global problem involved whaling communities from all over the world, and until very recently, none ever even considered creating the global public good of an overarching property regime to maintain worldwide stocks.

(2) A second reason why people often cannot agree on a property regime (whether initially or at a revision stage) is that they get snarled in the distributional conflicts that a property regime raises. Property rights make obvious the issue of who gets what, and this can cause problems. From a purely utilitarian point of view, the initial distribution of entitlements in a valuable resource is a distinctly secondary issue if the entitlements can be traded, since trade will enhance the movement of goods and services to those who value them most, no matter who received them in

¹⁶ Bonnie J. McCay, "Emergence of Institutions for the Commons: Contexts, Situations, and Events," in Elinor Ostrom et al., eds., *The Drama of the Commons* (Washington, DC: National Academy Press, 2002), 361, 370–71.

¹⁷ At the local point of the kill, whalers adopted different rules for ownership of speared whales. Sometimes the right to the carcass was allocated to the whalers who successfully killed the animal and tagged it with a waif-pole; but for more dangerous whale species, where the first approach was particularly perilous, property in the carcass was allocated to the first whalers to cast a spear that the whale could not throw off, even if the kill were completed by others. Other participants in the hunt received various forms of compensation for their contributions. All these local rules aided any particular hunt, but did not address and may have exacerbated the larger issue of overhunting by all whalers. See Ellickson, *Order without Law*, 196–206.

the first instance. Besides, much wealth is created simply through trade, which encourages specialization in the areas of each trading partner's comparative advantage. On this utilitarian perspective, the important thing is simply to get a new or revised property regime under way for valuable resources, no matter who gets what at the outset.¹⁸

But distributional issues matter a great deal to the parties involved, both from a perspective of self-interest and from a perspective of fairness and desert.¹⁹ Natural resources are replete with instances in which parties fail to reach value-maximizing agreements over entitlements because they cannot agree on distribution, leading to situations that would be ludicrous if they were not so wasteful. A nineteenth-century case in the early Pennsylvania oilfields gives an example. In *Hague v. Wheeler* (1893), a natural gas developer sued a neighboring landowner to stop him from flaring off the natural gas that underlay both their properties; this was evidently a kind of extortionate effort on the part of the neighboring landowner, aimed at inducing the gas entrepreneur to run a pipeline to his property. The trial court held that flaring off natural gas was an unreasonable use of their common-pool property, but the Supreme Court of Pennsylvania reversed the lower court's decision, holding that the landowner was entitled to do as he pleased—which included wasting the commonly-held resource.²⁰

Even in cases like this, when courts step in to allocate entitlements, bad blood may still keep the neighbors from ever coming to terms over a trade.²¹ Cap-and-trade systems are now working their way into American fish stock management, but it has taken the biological collapse of many important fisheries to induce fishermen to try these property-rights schemes. A major stumbling block has been the choice of a basis for allocating newly-limited rights: Should the basis be each fisherman's past catch levels? Boat ownership? Boat capacity? Time spent as a crew member? All these possibilities yield different distributions, and the parties involved are acutely aware of the differences.²² Gary Libecap, an economist who studies such common-pool problems, argues that distributional

¹⁸ For the locus classicus of this argument, see Ronald H. Coase, "The Problem of Social Cost," *Journal of Law and Economics* 3, no. 1 (1960): 1–44.

¹⁹ For an exploration of distributional conflicts that may delay new or revised property regimes, see Gary Libecap, *Contracting for Property Rights* (Cambridge: Cambridge University Press, 1989); see also Robert Cooter, "The Cost of Coase," *Journal of Legal Studies* 11, no. 1 (1982): 1–33. The question of fairness and desert, for example, undoubtedly affected popular attitudes toward Russia's newly wealthy "oligarchs" and cleared the way for President Vladimir Putin's prosecution of these entrepreneurs. See Carol M. Rose, "Privatization—The Road to Democracy?" *Saint Louis University Law Journal* 50, no. 3 (2006): 691, 707.

²⁰ *Hague v. Wheeler*, 27 A. 714 (Pa. 1893).

²¹ Ward Farnsworth, "Do Parties in Nuisance Cases Bargain after Judgment? A Glimpse Inside the Cathedral," *University of Chicago Law Review* 69 (1999): 373–436 (describing the dearth of bargaining after nuisance suits are settled in favor of one party or the other).

²² See Katrina Wyman, "From Fur to Fish: Reconsidering the Evolution of Private Property," *New York University Law Review* 80, no. 1 (2005): 117, 193–97 (describing some of the conflicts over allocation of fishing rights); see also Tom Tietenberg, "The Tradable Rights

issues routinely disrupt the process of what he calls “contracting for property rights,” and the larger and more heterogeneous the group that must agree, the slimmer the chances and the longer the delay before they arrive (if ever) at property arrangements that can staunch the common-pool hemorrhage.²³

(3) A third reason why people often fail to come to terms on a property-rights regime is that falling back on Leviathan offers an escape from the knotty problems that property rights present. That is to say, people may settle on a command-and-control regime to manage resources, because command-and-control on the surface appears to require the same performance of all participants, thus evading the difficult distributional issues. Efforts to manage fish stocks often take a command-and-control turn long before turning to property approaches. For example, early-stage regulatory efforts are often prohibitions of certain kinds of gear or permission to fish only in certain time periods, precisely because command-and-control regulations like these avoid difficult confrontations over the distribution of entitlements. The disadvantage of these regulations, however, is that they can be very wasteful, with examples that would again be ludicrous if they were not so sad—like the tightly limited fishing seasons that fishermen turn into “derbies,” taking on so many fish that their boats sometimes sink under the weight.²⁴ And indeed, even the appearance of egalitarianism is deceptive in command-and-control regulation. We learned early on from command-and-control air pollution measures that seemingly equal requirements have great cost differences in different locations and under different circumstances.²⁵

Failure to agree is thus an important and multifaceted reason why property regimes never come into place or fail to assimilate to new pressures on resources. But there are other reasons as well for the failure of property regimes.

Approach to Protecting the Commons: What Have We Learned?” in Ostrom et al., eds., *The Drama of the Commons*, 197, 208–9.

²³ Libecap, *Contracting for Property Rights*, 21–23.

²⁴ Shi-ling Hsu, “Fairness vs. Efficiency in Environmental Law,” *Ecology Law Quarterly* 31 (2004): 303, 375–76, notes that uniform restrictions on technology predate market-based regulations because they seem more fair and raise fewer objections. For “derby” or “olympic” fishing practices, see Carrie A. Tipton, “Protecting Tomorrow’s Harvest: Developing a National System of Individual Transferable Quotas to Conserve Ocean Resources,” *Virginia Environmental Law Journal* 14 (1995): 381, 391–95.

²⁵ Hsu, “Fairness vs. Efficiency,” 370, notes with respect to air pollution control that a coal-burning plant in one location might more cheaply burn low-sulfur coal, whereas another plant elsewhere would install exhaust pipe scrubbers; a uniform technology requirement to install scrubbers favors the latter over the former. Similarly, it is more difficult to meet uniform air quality standards in a heavily populated inversion area like Los Angeles than in a windswept and lightly populated area like the western plains. On this issue, see James E. Krier, “The Irrational National Air Quality Standards: Macro- and Micro-Mistakes,” *UCLA Law Review* 22, no. 1 (1974): 323–42.

B. A property regime may be ineffective or inconsistent

There are a number of reasons why property regimes may be ineffective, many leading back to governmental incapacity. In the simplest case, a government may lack the financial resources and administrative capacity to project the basic elements of a modern property regime throughout its territory. Record systems, impartial enforcement, and dispute resolution are elements of a property regime that may not function in a weak government. Corruption can corrode the effectiveness of property systems even further, as when technical objections block land registration until the landowner pays under the table, or when supposedly neutral enforcement agents wink at violations by favored persons or firms.

Of course, formal property regimes are not the only option. Even in the absence of modern forms of property rights, people use informal systems to manage resources that are important to them. These regimes are not perfect, however, either from the perspective of economic development or of libertarian independence. For one thing, informal regimes are generally limited to resources that are relatively easily monitored, usually involving extractive activities of one sort or another, like grazing or water use. Indeed, an important criterion for the success of informal property rights is that individual entitlements can be ordered in such a way that they can be monitored by members of the group, and particularly by the most affected members of the group. As an example, Elinor Ostrom cites the community-based irrigation systems in which each farmer along the channel can observe the time and rough quantity of water that is diverted by the neighboring farmer who precedes him in turn.²⁶ But informal regimes do relatively little to address issues of pollution, which are much harder to monitor, and in any event, community members may be indifferent to pollution that affects outsiders rather than the community members themselves. In addition, long-lasting informal rights regimes depend for enforcement on the community and its implicit or explicit hierarchies. Customary practices are likely to favor certain groups over others (notably men over women); and they are generally not welcoming to outsiders, since outsiders could disrupt the social relations that hold the community together. Moreover, customary informal property regimes tend to be very complex; these complexities serve a purpose by cementing ties among the community members, but they further limit the ability of outsiders to participate through trade. Hence informal regimes are constrained in a variety of significant ways: for example, in their ability to raise capital or to make room for new ideas.²⁷

²⁶ Ostrom, *Governing the Commons*, 73–74.

²⁷ For these and other pros and cons of community-based management regimes, see Carol M. Rose, “Common Property, Regulatory Property, and Environmental Protection: Comparing Community-Based Management to Tradable Environmental Allowances,” in Ostrom et al., eds., *The Drama of the Commons*, 233–57.