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Lecture

THE TRAGEDY OF FRAGMENTATION

Eric T. Freyfogle*

I. INTRODUCTION

Among certain academic circles it has become common to assert that owners of private land take care of what they own. One encounters the claim most often in discussions about land-related environmental problems. Unowned lands, resources shared by many: these are the ones that are degraded, it is said, not lands that have a single owner vested with clear, secure rights. Private owners take care of what they own.¹

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¹ The assertion is a key element in libertarian writing on environmental issues. *E.g.*, TERRY L. ANDERSON & DONALD R. LEAL, *FREE MARKET ENVIRONMENTALISM* (rev. ed. 2001); Bruce Yandle & Andrew P. Morriss, *The Technologies of Property Rights: Choice Among Alternative Solutions to Tragedies of the Commons*, 28 *ECOLOGY L.Q.* 123, 130 (2001). For expressions of the idea by prominent mainstream legal scholars, see Robert C. Ellickson, *Property in Land*, 102 *YALE L.J.* 1315, 1368-69 (1993) (Privatization is “a low-transaction cost device for inducing a mortal landowner to conserve natural resources for future generations . . . [T]he key to land conservation is to bestow upon living persons property rights that extend perpetually into the future.”); Barton H. Thompson, Jr., *Tragically Difficult: The Obstacles to Governing the Commons*, 30 *ENVTL. L.* 241, 243-44 (2000) (Privatization is “typically a particularly effective solution to the tragedy of the commons” because “resource owners will incur the entire cost of overuse and thus carefully husband the resource”). Scholars who embrace this perspective (often doing so implicitly) commonly recognize two key points along the way: first, that landowners have incentives to externalize costs in the form of harms imposed on other landowners and second, that the increased fragmentation of land increases boundaries that need marking and enforcing. *E.g.*, Ellickson, *supra*, at 1326, 1329. Yet they commonly seem confident that landowners will and do practice conservation within the bounds of what they own. *Id.* at 1327. They also assume that landowners who are able to police the boundaries of their lands will encounter no

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For people worried about the health of the overall land community, this claim tolls a comforting tone. It is a hope-filled assertion, particularly for those who live in states where nearly all land is private. If private owners take care of what they own, then the challenge of land stewardship is not nearly as vast as one might fear. Conservationists only need to worry about parcels not in private hands – public lands or undivided lands – a more manageable job. And the best way to deal with such lands, or at least one way to deal with them, is to turn them over to private owners, whenever and as quickly as possible.

Before taking solace in this factual claim, however, it would seem wise to dig into it, to see what the statement means when scholars use it, and, indeed, to ask whether it is true. What does it mean to take care of land? How can we tell whether land is or is not properly cared for? And what evidence arises from the land itself, in terms of its current health and how owners have used it?

To undertake this inquiry, we need to begin with the academic conversation that has given birth to this sweeping claim, the conversation that in recent decades has centered, not on land that has a single private owner, but on lands that are used by many people, lands that are open to the public or that otherwise have multiple users. Discussions about such lands have gone on for hundreds of years, but the now-usual place to enter the discussion is just a third of a century ago, with the article that vaulted the common-lands issue into the academic limelight.

II. THE TRAGEDY AND ITS SOLUTIONS

The article is the now-classic work, “The Tragedy of the Commons,” which appeared in *Science* in 1968, written by biologist Garrett Hardin.² In the article, Hardin considered why people who used a shared natural resource tended to overuse it, and ultimately degrade it, when their

difficulties taking care of their lands – with little need, apparently, to coordinate practices with neighbors. As I argue below, I believe the latter two points are materially incorrect: even ignoring spillover effects, landowners often do not care for what they own, and even well-meaning landowners, highly desirous of taking care of what they own, cannot do so fully given the realities of ecological interconnection and the many conservation needs that can be addressed only on much larger spatial scales. The latter problem is particularly exacerbated by land fragmentation, and as I have urged elsewhere it is best addressed, not by making boundaries more secure and impermeable (as Professor Ellickson and others would suggest), but by finding good ways to diminish their importance. See ERIC T. FREYFOGLE, *BOUNDED PEOPLE, BOUNDLESS LANDS: ENVISIONING A NEW LAND ETHIC* (1998).

² Garret Hardin, *The Tragedy of the Commons*, 162 *SCI.* 1243 (1968).

activities were unrestrained. Hardin employed the example of an unregulated pasture to illustrate his argument, which went something like this: when an individual grazier is free to add more livestock to the open pasture, he will do so. He will add the livestock because the benefit of doing so – the extra forage eaten by the animals – is pure gain for the grazier. Costs are associated with adding the animals: less forage is available for other livestock, and once the pasture's carrying capacity is exceeded its productivity will decline. But those costs do not fall on the individual grazier alone – they are spread among all users of the commons. The grazier who adds the animal, that is, enjoys all the gain while bearing only a portion of the total costs. Even when the impact of adding an animal is negative overall, the grazier has an incentive to keep adding. But, then, what is true for one grazier is true for others: each has an incentive to add animals, even when the action drags down the pasture as a whole. As that happens, with each grazier acting in his or her self-interest but to the detriment of the group, the tragedy of the commons unfolds.

Hardin was not the first to comment on this cause of land degradation. Writings about it go back at least as far as Aristotle.³ Sir Thomas Smith, a leading critic of land enclosures in England, noted the problem in his important work from 1549, *Discourse of the Common Weal*: "That which is possessed of many in common is neglected of all," he wrote. "Tenants in common be not so good husbands as when every man has his part in severality."⁴ What Hardin added to this settled wisdom was the catchy phrase, and his phrase caught on. The unregulated commons gave rise to a tragedy, he asserted; a tragedy, not just in the sense of a bad outcome, but in the sense that ancient Greek dramatists and Shakespeare used the term: a bad outcome that flowed from the inexorable working of forces that dragged people down; an outcome that flowed from human nature and that was the predictable consequence of that nature. In the case of the tragedy of the commons, the human nature involved was the penchant of people to look after themselves as individuals; to promote their separate interests over the good of the whole. And what allowed this to happen was their individual freedom. As Hardin put it, "[r]uin is the destination toward

³ ELINOR OSTROM, *GOVERNING THE COMMONS: THE EVOLUTION OF INSTITUTIONS FOR COLLECTIVE ACTION* 2 (1990) ("[W]hat is common to the greatest number has the least care bestowed upon it.") (quoting 2 ARISTOTLE, *POLITICS* ch. 3).

⁴ JAMES A. MONTMARQUET, *THE IDEA OF AGRARIANISM: FROM HUNTER-GATHERER TO AGRARIAN RADICAL IN WESTERN CULTURE* 74 (1989) (quoting *DISCOURSE OF THE COMMON WEAL* 50 (Mary Dewar ed., 1969)).

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which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons."⁵

Along with his grazing commons example, Hardin also talked about the cases of air and water pollution. These, too, he asserted, presented natural tragedies. When an individual polluted, the motive was not to capture economic gain but rather to avoid economic costs. Polluting was often cheaper than halting the pollution. The pollution itself caused harm, of course, but other people largely bore that harm, the people downstream or downwind. Once again, benefits and costs were out of alignment. A polluter might rationally go ahead and pollute, even when the harm caused by the pollution vastly exceeded the costs of halting it. Here, again, what was true for one polluter was true for others. Each had an incentive to pollute, even though everyone suffered. The deadly combination of selfishness and civil liberty inexorably gave rise to ruin.

Had he chosen to do so, Hardin at this point could have turned his narrative into a simple morality tale. The root of his tragedy was the human nature displayed by the grazier and the polluter, the selfishness that drove their conduct: their tendencies, not just to favor themselves over others, but to do so when their conduct affirmatively harmed others more than it benefitted them. This was a hurtful form of egotism, which Hardin could have condemned under any well-grounded ethical scheme. Indeed, Hardin might then have given his article a far different title, "The Tragedy of Selfish Individualism."

Hardin, though, chose to pass up the opportunity to resolve the issue simply in moral terms. Instead, he turned to institutional arrangements that might channel or contain the bad conduct. As he saw matters, two institutional means were available to avert the tragedy. One was for the group members to get together and impose restraints on themselves: mutual coercion, mutually agreed upon, as Hardin would put it. If users of the commons limited one another, they could reduce the tragedy, and if they used good science and sound virtue when doing so, they might successfully moderate use of the commons to the point where it remained productive and healthy in perpetuity.

Hardin's focus in his essay was on the human population on Earth, and he saw a need to come up with some sort of mutual coercion to limit world-wide reproduction. Only casually did he follow up on his grazing-commons hypothetical. When he did follow up, he took note of

⁵ Hardin, *supra* note 2, at 1244.

what he viewed as the second way of avoiding the tragedy of the commons – dividing the commons into private parcels and establishing an owner for each. When that was done, costs and benefits came into better alignment. The individual grazier now had complete control of a single parcel. The grazier was still free to add another animal and get the gain from it, but this time the costs would all be borne by that grazier, or so Hardin assumed. No longer would costs be spread widely among all graziers. In this way, human selfishness no longer led to tragedy; it led, or normally would lead, to an economically sound decision on stocking levels.

Hardin's analysis met quick and pointed criticism when it came out. Other scholars had spent lifetimes studying common-property regimes, including common grazing lands, and they knew full well that common-property arrangements sometimes work just fine, with nothing like the tragedy that Hardin predicted.⁶ What Hardin described was essentially an open-access commons, one in which outsiders could show up at any time and start using it; or he meant a commons in which only specified people could use it but they could increase their use at will, without getting permission from others. In truth, scholars have pointed out, long-term grazing arrangements do not work this way. Arrangements that survive are highly controlled affairs. Outsiders cannot come in, nor can insiders increase their usage rates at will. Usage is carefully restricted by formal laws and regulations, by binding contractual provisions, or by less formal but nonetheless clear and respected rules.⁷

Hardin's analysis, once properly limited to the open-access type of commons, seemed to many readers to offer great insights, both into the fundamental nature of our environmental predicament and into how we might best deal with it. If resource-use problems were caused by the tragedy of the commons, and if privatization was a solution, then the best environmental policy was one that put resources into private hands. If a resource could be divided, it should be. Privatization was a solution

⁶ Much of the scholarly writing through 1990 is drawn upon in Elinor Ostrom's now classic work, *Governing the Commons*. See OSTROM, *supra* note 3. As Ostrom notes, some observers so strongly favor privatization as to deny that any other option can solve Hardin's tragedy. *Id.* at 12-13. For a useful reference, see CHARLOTTE HESS, *COMMON POOL RESOURCES & COLLECTIVE ACTION: A BIBLIOGRAPHY* (1996).

⁷ For differing perspectives on how commons might successfully be managed, see OSTROM, *supra* note 3; see also INSTITUTIONS, ECOSYSTEMS, AND SUSTAINABILITY (Robert Constanza et al. eds., 2001); *MANAGING THE COMMONS* (John A. Baden & Douglas S. Noonan eds., 2d ed. 1998); *THE QUESTION OF THE COMMONS: THE CULTURE AND ECOLOGY OF COMMUNAL RESOURCES* (Bonnie J. McCay & James M. Acheson eds., 1987).

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because, as Hardin urged, private property arrangements brought costs and benefits into alignment in such a way that a landowner's natural urge to promote self-interest would ensure good land use. Only resources that could not be divided, such as flowing air or migratory birds, needed to remain commonly owned. Only such resources called for some form of what Hardin termed mutual coercion mutually agreed upon.

Hardin's analysis led many readers to conclude that government regulation was not needed to promote conservation in the case of private land, at least beyond the work of defining rights and ensuring their transferability. And for many readers it was just the message they wanted to hear. Readers disdainful of government plainly liked it. It was a message that also appealed to advocates of free markets and to defenders of strong private property rights. All liked the clarity and force with which Hardin seemed to sweep aside government interference with the acts of private landowners. Owners should have their liberty respected, many urged; private desires and market forces should dictate how resources are employed.

III. TESTING HARDIN'S CLAIM

No doubt this obvious ideological appeal has been one reason why so many readers of Hardin's work, then and now, have seized upon his conclusion without pausing to check how well it comported with known facts about land and landowner behavior. Hardin reached his conclusion solely by means of logical reasoning, but the claim he made was a factual one at root, testable with empirical data. If private owners take care of what they own, evidence from the field should sustain the theory. Lands in private hands should be, in fact, well tended.

One challenge in testing Hardin's factual claim is that we require, to perform the job, some means of measuring whether particular lands are being well tended. To determine whether an owner is taking good care, one needs to know what "good care" means.

One approach to take on this point - an approach that simplifies matters significantly - is to treat Hardin's conclusion as essentially a tautology, something akin to the claim that consumers spending money in the market act rationally. If we define rational consumer behavior as essentially anything a consumer does - that is, if we assume that consumers know what they want and act consistently on what they know - then supporting facts are unneeded. To say that a consumer acts rationally is simply to say that a consumer does whatever he or she

chooses to do; all such actions are rational, which means the claim of rationality tells us nothing. We might analogize here to the longstanding contention that, in the science of evolution, the "survival of the fittest" theory is merely a tautology. If fitness is defined solely in terms of survival, as some think it is, then survival of the fittest simply means survival of those who survive. And, of course, to note that survivors survive is to say nothing meaningful.

In the context of land use, Hardin's assertion could be treated in much the same way. To say that a private owner takes care of the thing owned could be an empty statement if we define "taking care" simply as whatever private owners choose to do. Owners do whatever they want, and what they want qualifies as taking care.

At least some scholars, one suspects, implicitly define "taking care" in just this simple manner, which is perhaps why factual evidence is not discussed. For readers interested in the actual health of the land, however, a tautological approach obviously will not do. A statement empty of meaning cannot sustain an argument, much less offer solace. We can quickly put it aside.

A more plausible interpretation of Hardin's claim is one that sinks roots into neo-classical economic thought. An owner with secure, full rights in land can put the land to economically valuable uses or else sell it to someone else who can devote the land to its highest-valued uses. The human desire to promote self-interest, then, will prompt an owner to devote land to the use that, in the owner's view, generates the most value. Land, then, is properly used - its owner takes care - when its chosen use maximizes the owner's economic return.

This assertion is not a simple tautology, but it does bear striking similarities to the weak claim that consumers always act rationally. How do we know whether an owner has or has not devoted land to its highest-valued use? If we simply let owners decide what is best, equating an owner's decision with highest value, then we have reduced the claim again to a tautology. If highest use is merely a description of what an owner does, then we learn nothing by hearing that owners take care.

To the average economist, Hardin's claim is not a tautology. Though highest use is determined by an owner and based on the owner's assessment of relative value, the outside market provides an external, objective measure of the dollar value of many land use options. Owners commonly are price takers, whether they grow corn or rent apartments.

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Owners can be eccentric, yet most seek to maximize their cash return on land, and the economic returns on competing land use options are not matters of mere landowner whim.

This line of reasoning does avoid the tautology pitfall, but with a bit of probing it displays a number of weaknesses, even if we accept its questionable assumption that one cares for land by applying it to the use that earns the most for the owner.⁸ Market forces work well only if owners have full information about options and about the full costs associated with them, which they may or may not have. Many landowners, as price takers, face strong external pressures to compete with other land users, and out of necessity embrace land use practices that sap the land's long-term productivity. Landowners can vary greatly in the ways they discount the future; yet even with a relatively low discount rate, the long-term future - a century ahead, for instance - can diminish into insignificance. Some landowners may care little about what happens after they are gone and may sap the land in short order, even when it may seem more sensible to sell the land to another user. Then there are the many parts of the land community that simply have no direct market value and that owners might freely destroy at will, without incurring a market penalty. To this important limitation we can add the whole matter of external harms generated by a land use activity, harms that the landowner can ignore because they have not been internalized.

Scholars whose work centers on economic models are not the only ones to give thought to what it means to take care of land. Indeed, the economic literature hardly compares in size with the literature from other disciplines. Economists typically start with the market and with principles of landowner behavior and reach conclusions through logical

⁸ I develop the ideas in this paragraph in more detail in ERIC T. FREYFOGLE, *JUSTICE AND THE EARTH: IMAGES FOR OUR PLANETARY SURVIVAL* 26-42 (1993). In offering the points here (none of which, of course, is original), I do not mean implicitly to compare private decision making with government decision making or otherwise to suggest how the deficiencies of the market might best be addressed. If I am right on these points, then privatization is not a full solution to the tragedy of the commons. How far short it falls cannot be determined in the abstract (that is, based on theory alone); it requires actual study in the field, drawing upon appropriate ecological, ethical, and aesthetic standards. Much of the psychology literature pertinent to this issue is thoughtfully considered by Professor Barton Thompson in *Tragically Difficult*, though he presents the material as if it were pertinent only to the management of commonly managed resources. See Thompson, *supra* note 1. For a useful, recent addition to the literature, see Erling Moxnes, *Not Only the Tragedy of the Commons: Misperceptions of Bioeconomics*, 44 *MGMT. SCI.* 1234 (1998).

steps.⁹ A more common way of thinking about land use is to attend to the land itself in all its natural complexity, studying how land functions, how plants grow, how and why animals flourish, and how the well being of one part of nature is linked to the well being of other parts. Natural scientists for generations have explored the land's mechanisms of production, though the gaps in their understanding remain vast.

How humans should use this integrated, natural order has not been easy to discern, even for attentive land students. Nature's ways are confusing and human needs shift over time. Added to the mix are ethical questions, which for many people carry great weight; when they are factored in, science alone cannot set overall goals.¹⁰ If we are morally bound to preserve other species, as most people believe, then land is well tended only when other species survive.¹¹

Many writers on land policy have come to embrace, as a land management standard, the goal of sustainable development.¹² Land is properly used, they assert, when its use is consistent with the long-term achievement of this goal. Other observers, sensing too much tension within the term sustainable development – and fearing, in particular, that the development prong will overwhelm the sustainability prong – propose instead that we shorten the goal to sustainability, a term usually defined in terms of sustaining the natural productivity of the land as a

⁹ One reason for this, one might guess, is the reality of academic fragmentation that so plagues the scholarly world today. With so many disciplines and such huge quantities of relevant literature, it is impossible for any scholar to read comprehensively on issues as vast as the human-land connection. Given the public prestige of economics, it is perhaps unsurprising that many economists feel able to make recommendations about how people ought to think about land and prescribe rights in it with little regard for such bodies of knowledge as ecology (especially conservation biology), environmental history, and environmental philosophy.

¹⁰ Ideas on the proper and improper roles of science in land management are offered in Eric T. Freyfogle & Julianne Lutz Newton, *Putting Science in its Place*, CONSERVATION BIOLOGY (forthcoming 2002) (arguing that science should be supplemented, through sound processes, with the full range of utilitarian and ethical considerations before scientific terms such as "ecological integrity" can properly be used to evaluate land normatively or to prescribe standards for its management).

¹¹ See WILLETT KEMPTON ET AL., ENVIRONMENTAL VALUES IN AMERICAN CULTURE 109-14 (1995) (showing, *inter alia*, eighty-seven percent public support for the idea that "all species have a right to evolve without human interference" and ninety percent support for the idea that "preventing species extinction should be our highest environmental priority").

¹² For the most prominent expression, see WORLD COMM'N ON ENV'T AND DEV., OUR COMMON FUTURE (1987). In the United States, see PRESIDENT'S COUNCIL ON SUSTAINABLE DEV., TOWARDS A SUSTAINABLE AMERICA (1999). A thoughtful, detailed inquiry from a legal perspective is offered in John C. Dermach, *Sustainable Development as a Framework for National Governance*, 49 CASE W. RES. L. REV. 1 (1998).

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whole.¹³ Yet other observers argue that conservation policy should center on the maintenance of biodiversity, particularly on maintaining those life forms that would inhabit a landscape but for human alteration.¹⁴

In a recent survey of conservation thought, several scholars have divided current thought on this important subject into two overlapping categories.¹⁵ In one category are observers who propose that land use practices aim toward the maintenance of particular ecosystem functions, such as fertility cycles and hydrologic flows. These are the so-called functionalists. Competing with them are observers who believe that land planning should focus, not on ecological processes, but on the land's living parts, on the plants and animals that compose (or ought to compose) a given community. These are the compositionists, and they are at the forefront of arguments about the need, not just to protect threatened and endangered species, but to restore native species to much (or all) of their original ranges, thereby enabling landscapes to regain their original (i.e., pre-European settlement) biological membership. Now, to protect the biological composition of a landscape one must perforce maintain ecological functions, so the conflict here is not great. Perhaps the key distinction is that pure functionalists are concerned with protecting particular species only to the extent such species play ecological roles that other species could not easily perform; compositionists, in contrast, seek to protect all native species, however ecologically redundant.

Within the legal community attention has begun to be paid to the maintenance of what Paul Ehrlich a few decades ago termed ecological services - that is, the functions that nature performs that directly benefit long-term human life.¹⁶ Scholars guided by this concern fit rather

¹³A thoughtful probing of the term is offered in J. BAIRD CALLICOTT, *BEYOND THE LAND ETHIC* 365-80 (1999). Some of the widely varied ideas attached to the term are surveyed in Richard P. Gale & Sheila M. Cordray, *Making Sense of Sustainability: Nine Answers to "What Should Be Sustained?,"* 59 *RURAL SOC.* 311 (1994). Ecological sustainability was employed as a guiding standard in a prominent report prepared for the COMM. OF SCIENTISTS, U.S. DEPT OF AGRIC., *SUSTAINING THE PEOPLE'S LANDS: RECOMMENDATIONS FOR STEWARDSHIP OF THE NATIONAL FORESTS AND GRASSLANDS INTO THE NEXT CENTURY* (1999); see also James Salzman, *Sustainable Consumption and the Law*, 27 *ENVTL. L.* 1243 (1997) (employing numerous variants).

¹⁴ Varied perspectives are surveyed in R. Edward Grumbine, *What is Ecosystem Management?*, 8 *CONSERVATION BIOLOGY* 27 (1994).

¹⁵ J. Baird Callicott et al., *Current Normative Concepts in Conservation*, 13 *CONSERVATION BIOLOGY* 22 (1999).

¹⁶ E.g., 20 *STAN. ENVTL. L.J.* (2001) (special issue on ecosystem services).

comfortably into the functionalist category. As such they owe a debt, as do others in this category, to the important work of ecologist and wildlife manager Aldo Leopold, the preeminent conservation writer of twentieth-century America.¹⁷ Far ahead of his time, Leopold - in the 1930s and 1940s - struggled with the challenge of setting an overall goal for conservation work, a goal keyed to the long-term productivity of the entire land community. The goal that he ultimately developed was what he termed land health, which he defined chiefly in functional terms and which focused on the maintenance of intact fertility cycles.¹⁸ The goodness or badness of land use, Leopold urged, should be gauged by whether it sustains land health. A landowner takes care when her patterns of land use are consistent with the achievement of this goal.

Far more could be said about this literature in terms of its richness, its diversity, and the scientific and ethical thinking that undergirds it. What is important here is to note only that it exists and that, in its many forms, it supplies a range of standards to employ in determining whether land in fact is being well tended; whether private landowners, as well as public land managers, are taking care of what they own. Once a standard is selected, we can proceed to gather appropriate evidence and then make the key determination: Does private ownership lead inexorably to sound land use?

IV. EVIDENCE FROM THE LAND

Anyone involved professionally in land conservation might find much of this discussion tiresome and unnecessary. In the consideration of land use, the land itself has remained off stage. Those who know it and its history are likely to have no trouble responding to Garrett Hardin's claim. Do private landowners take care of what they own? The answer, in many, many instances, is positively not under any standard that values the land's long-term productivity.¹⁹

¹⁷ Leopold's story is well told in SUSAN L. FLADER, *THINKING LIKE A MOUNTAIN: ALDO LEOPOLD AND THE EVOLUTION OF AN ECOLOGICAL ATTITUDE TOWARD DEER, WOLVES, AND FORESTS* (1974); CURT MEINE, *ALDO LEOPOLD: HIS LIFE AND WORK* (1988).

¹⁸ Land health as defined by Leopold is considered in J. BAIRD CALLICOTT, *BEYOND THE LAND ETHIC*, 187-261 (1999); Eric T. Freyfogle, *A Sand County Almanac at 50: Leopold in the New Century*, 30 ENVTL. L. REP. 10058 (2000). Many of the key writings are reprinted in SUSAN L. FLADER & J. BAIRD CALLICOTT, *THE RIVER OF THE MOTHER OF GOD AND OTHER ESSAYS BY ALDO LEOPOLD* (1991) [hereinafter *RIVER OF THE MOTHER OF GOD*].

¹⁹ Land historian Brian Donahue has been particularly critical of the assumption that private landowners take care of what they own, terming the idea "so childishly simplistic as to be disingenuous." BRIAN DONAHUE, *RECLAIMING THE COMMONS: COMMUNITY FARMS*

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Remember, merely, the Dust Bowl era, when dark clouds of silt from the Plains drifted into the legislative chambers of Congress before heading hundreds of miles out to sea.²⁰ A terrible land use disaster, brought about largely by private landowners on land they securely owned. By then, 1935, evidence of soil erosion was already as plentiful as it was painful. Congress created the Soil Erosion Service, later renamed the Soil Conservation Service, later still the Natural Resources Conservation Service.²¹ Decades into its work and billions of dollars later, the agency continues to wage battle with widespread ills on private land.²²

The poor record of many landowners in maintaining soil fertility is only the handiest example of how private landowners have used what they own in ways that degrade long-term productivity. In arid places, irrigated agriculture slowly ruins land by crusting soil with salts.²³ Though slash-and-burn forestry may have largely ended in this country, current tree-farming methods are slowly degrading forest soils while massively disrupting forests as complex living ecosystems.²⁴ Those who monitor the status of wild species in the United States know that habitat degradation is the key cause of continued species declines, and no habitat is more on the decline than habitat on privately owned lands.²⁵ Those who attend to the workings of Congress know that the country spends billions of dollars annually on a Conservation Reserve Program, paying cash to private landowners to induce them to curtail damaging practices. On the not-for-profit side, one can highlight the growing land trust movement, which pools money from concerned citizens to use in protecting tracts of land that would otherwise be devoted by their owners to undesired uses.

& FORESTS IN A NEW ENGLAND TOWN 296 (1999); see also John R. McNeill, *Tragedies of Privatization: Land, Liberty, and Environmental Change in Spain and Italy, 1800-1910*, in LAND, PROPERTY, AND THE ENVIRONMENT 222, 223 (John F. Richards ed., 2002) ("Privatization of common resources can lead to environmental tragedies, too.").

²⁰ See DONALD WORSTER, *DUST BOWL: THE SOUTHERN PLAINS IN THE 1930S* (1979).

²¹ See TIM LEHMAN, *PUBLIC VALUES, PRIVATE LANDS: FARMLAND PRESERVATION POLICY, 1933-1985*, 5-41 (1995).

²² The latest initiative on the subject is set forth in NATURAL RES. CONSERVATION SERV., U.S. DEP'T OF AGRIC., *AMERICA'S PRIVATE LAND: A GEOGRAPHY OF HOPE* (1997).

²³ G. TYLER MILLER, JR., *ENVIRONMENTAL SCIENCE: SUSTAINING THE EARTH* 280-81 (3d ed. 1991).

²⁴ Charles E. Little, *The Dying of the Trees*, in *THE PANDEMIC OF AMERICA'S FORESTS* (1995).

²⁵ J. Michael Scott et al., *Nature Reserves: Do They Capture the Full Range of America's Biodiversity?*, 11 *ECOLOGICAL APPLICATIONS* 999 (2001); David S. Wilcove et al., *Quantifying Threats to Imperiled Species in the United States*, 48 *BIOSCIENCE* 607, 607 (1998).

To those who study land and worry about its condition the problems to address are many, and they are problems, importantly, that largely afflict private land. In the farmlands of the Midwest, to cite only one further illustration, widespread drainage efforts and polluted run-off from farm fields have seriously degraded waterways, so much so that numerous aquatic species have disappeared.²⁶ The Nature Conservancy has worked with landowners in a few such watersheds to improve land use practices.²⁷ But their efforts so far have largely run aground once studies have been done and demonstration projects constructed. Landowners, in truth, are pressed hard financially. Yes, they can see the degradation, particularly when brought to their attention. And yes, for the most part, they would like to see shifts in land practices. But the economics of farming are such that they have no choice, so they sense, but to continue using the land as they do.²⁸ The market is a harsh master, demanding that landowners lower costs in the short run. And lowering costs often means losing topsoil, degrading rivers, and dumping chemicals into waterways that downstream communities, seeking water to drink, must pay to remove.

A powerful irony arises when one studies such watersheds and then turns to Hardin's popular narrative. In Hardin's story, private landownership creates an incentive to care for the land; it is a solution to land degradation. In the Mackinaw River of Illinois, however, as in countless other watersheds in rural America, private property is thought of in much different ways.²⁹ Private property has become a shield that landowners and their industrial allies use to ward off claims that landowners ought to take better care of what they own. Land degradation is the widespread problem; government regulation is the proposed solution; and private property is the shield that keeps regulators at bay. In the widely held view, laws insisting that landowners exercise restraint in the public interest are interferences with

²⁶ See DAVID S. WILCOVE, *THE CONDOR'S SHADOW: THE LOSS AND RECOVERY OF WILDLIFE IN AMERICA* 106-08 (1999).

²⁷ See, e.g., FREYFOGLE, *supra* note 1, at 151-70 (describing The Nature Conservancy project in the Mackinaw River watershed of Illinois).

²⁸ A fuller exploration of this problem would look at the entire agriculture system in the United States, including technology, trade and farm-subsidy programs, and the influences of agribusiness on research priorities and information flows. If critics, such as Wes Jackson, are correct, current farm practices focused on annual monocultures such as corn and wheat are inherently destructive of land and need massive change. See WES JACKSON, *NEW ROOTS FOR AGRICULTURE* (1985); see also JUDITH D. SOULE & JON K. PIPER, *FARMING IN NATURE'S IMAGE: AN ECOLOGICAL APPROACH TO AGRICULTURE* (1992). If so, individual landowners today may have little practical choice but to degrade gradually the lands that they use.

²⁹ See FREYFOGLE, *supra* note 1, at 153-56.

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constitutionally protected rights. Strong property rights, that is, far from ensuring good land use, have contributed to its continued misuse.

Perhaps no one would be more dismayed by this current tendency to applaud landowners for their stewardship than Aldo Leopold, whose classic writing, *A Sand County Almanac and Sketches Here and There*, appeared in 1949, the year following his death.³⁰ Leopold spent the final quarter century of his life addressing what he viewed as the chief conservation challenge of his day: the promotion of sound conservation practices on private lands. Leopold thought long and hard about why private owners used lands as they did. Time and again he would sit at his desk, pull out his yellow pad, and try to work out on paper what made landowners tick.³¹ What were their motives in making land use decisions, he would ask, and how might the land use calculus be adjusted so that owners acted more responsibly? It was a knotty challenge, yet he was dogged in his search for solutions.³² Like many scholars today, Leopold took an early interest in economic incentives. But he soon saw the weaknesses and limitations of that approach. Legal

³⁰ ALDO LEOPOLD, *A SAND COUNTY ALMANAC AND SKETCHES HERE AND THERE* (1949).

³¹ Many of these writings remain in Leopold's papers in the archives of the University of Wisconsin, Madison, chiefly in his "unpublished manuscripts." Aldo Leopold (unpublished manuscripts on file at 9/25/10-6, 16-18, Aldo Leopold Papers, University of Wisconsin-Archives). E.g., *Conservation and Politics* (opening with the question: "How can private land owners be induced to use their lands conservatively?"); *Ecological Haves and Have-Nots* ("The basic question in conservation is not the condition of the land, but the proportion of people who love it."); *Motivations for Land Use* (stating that, "an entirely new theory of motivation for land-use reform is needed"). A revealing brief manuscript from the mid-1940s shows the pessimistic turn that Leopold was taking late in life:

If the public were told how much harm ensues from unwise land-use, it would mend its ways. This was once my credo, and I think still is a fairly accurate definition of what is called "conservation education." Behind this deceptively simple logic [are] three unspoken but important assumptions: (1) that the public is listening, or can be made to listen; (2) that the public responds, or can be made to respond, to fear of harm; (3) that ways can be mended without any important change in the public itself. None of the three assumptions is, in my opinion, valid.

Aldo Leopold, *Conservation Education: A Revolution in Philosophy*, (undated) (unpublished manuscript on file at 9/25/10-6, Aldo Leopold Papers, University of Wisconsin-Archives).

³² Many of the key published papers revealing the evolution of Leopold's thought appear in ALDO LEOPOLD, *FOR THE HEALTH OF THE LAND: PREVIOUSLY UNPUBLISHED ESSAYS AND OTHER WRITINGS* (J. Baird Callicott & Eric T. Freyfogle eds., 1999) [hereinafter *FOR THE HEALTH OF THE LAND*]; *RIVER OF THE MOTHER OF GOD*, *supra* note 18.

measures he also considered, along with boycotts and social ostracism.³³ He worked tirelessly to promote what has come to be known as community-based conservation, getting landowners together at the local level to identify shared problems and to talk about possible solutions. He was tireless also in encouraging the public to see the land in new, more ecological ways. The conservation challenge, he came to understand, was at root a complex, cultural one, a matter of widespread perceptions and values, a matter of aesthetics and ethics as well as economics.³⁴ One product of Leopold's effort was his now famous land ethic, much-cited today though perhaps still not well understood.³⁵ Though Leopold did hope that ethical standards would evolve in ways that aided the land's well being, his ethic had far more meat to it than a casual reading might suggest, and it is best considered in the context of his large body of work on land conservation, particularly in the private lands setting. Embedded in his land ethic are important recommendations about ecological perceptions of land and the human place in the land community, scales of value and the virtues needed for sound land use, the overall goals for conservation work, and the kinds of social change needed before more forceful conservation tools would make sense to average citizens. It is important to note, too, that Leopold's land ethic makes as much (if not more) sense when considered as a guideline for communal rather than for individual action. Thus, to endorse Leopold's ethic is to embrace a wide constellation of ecological understandings and cultural values, which one could in turn implement in many ways. Leopold believed strongly that rhetoric counted a great deal, particularly rhetoric explaining how people fit into the natural order and how private landownership is linked to conceptions of the common good.

Leopold, for one, would be astonished to hear claims that private landowners take care of what they own, for in his decades of travel

³³ E.g., Aldo Leopold, *Land-Use and Democracy* (1942), reprinted in RIVER OF THE MOTHER OF GOD, *supra* note 18, at 295 ("If we do not like the way landowner X is using the natural resources of which he is the owner, why do we buy his products?").

³⁴ Though idealistic in his aspirations, Leopold remained highly pragmatic in his assessment of the merits and demerits of conservation tools. E.g., Aldo Leopold, Duckmarsh Doings (Dec. 5, 1941) (unpublished manuscript on file at 9/25/10-6-16, Aldo Leopold Papers, University of Wisconsin-Archives) ("The umpire of all conservation questions is that collective total of thoughts and experience called 'public sentiment.'").

³⁵ See LEOPOLD, *supra* note 30, at 201-26 (*The Land Ethic*). Many readers of Leopold, it would seem, interpret his land ethic as though it were largely or solely a practical mechanism for promoting sound land use: encourage people as individuals to think ethically about land, and all will be solved. For pragmatists, the advice seems naive.

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around the Midwest and Southwest he was overwhelmed with contrary evidence. One bit of that evidence he came to know intimately over the final decade of his life when he purchased and then set about restoring a small farm along the Wisconsin River.³⁶ Located on the farm was an old chicken coop that his family turned into a weekend get-away spot, quickly named and now memorialized as "The Shack." In one of his best-loved essays, Leopold would write about this land, taking note of the private owner who preceded him - the bootlegger, as Leopold would call him, "who hated this farm, skinned it of residual fertility, burned its farmhouse, threw it back into the lap of the County (with delinquent taxes to boot), and then disappeared among the landless anonymities of the Great Depression."³⁷

V. THE TRAGEDY OF FRAGMENTATION

Among conservationists today there is much debate about the best overall goal for guiding land use so as to sustain long-term productivity.³⁸ But no matter which competing goal one selects, there is no serious doubt that private landowners are failing to achieve it. Eccentric and uninformed landowners exacerbate the problem, but the root cause runs deeper. Even informed landowners, assiduous in promoting their land's highest value, fail to take care of what they own. Hardin's analysis, somewhere, contains a flaw.

To get at it, we need to return to the beginning of his story and give more thought to the whole matter of dividing land into shares - of privatizing it, as the process is now termed. What does the process entail? And why do we think that it will ward off tragic consequences?

Privatization as a solution rests on several assumptions, about landowner behavior and about the best way to define good land use. One key assumption is that when land is divided and a private owner starts using it, harms associated with that use will be shouldered by the owner alone, perhaps not completely but to such a high degree that harms imposed on neighbors can be ignored.³⁹ Hardin's tragedy arose because his hypothetical grazier could capture the benefits of adding

³⁶ See MEINE, *supra* note 17, at 340-96.

³⁷ LEOPOLD, *supra* note 30, at 9.

³⁸ The issue has aroused far more interest outside the legal academy than within, though recent attention being paid to the issue of ecosystem services could signal a shift. See *supra* note 16 and accompanying text.

³⁹ In making this assumption, Hardin put to the side (as adherents of his theory do today) problems such as air pollution and the intentional discharge of pollution into water bodies.

cows while avoiding nearly all the associated costs. Costs and benefits were mismatched. Privatizing solved the problem.

To probe this assumption, it may be useful to consider as test cases three types of current land use problems. One is the problem of waterway deterioration due to excessive artificial drainage; a second, the challenge of urban sprawl; the third, the matter of declining wildlife populations caused by habitat degradation.

Again, to the question: What does it mean to transform a common landscape into privately owned pieces? If we start with a common landscape and fragment it into individual parcels, in what way have we divided the commons?

As an initial matter, assuming we have not erected fences or other barriers, we have done nothing to the commons in any physical sense. The animals that scampered across it are still free to do so. The wind that blew across it still does, too. The groundwater percolating beneath the surface, the birds that fly around, the insect populations that ebb and flow - none are affected by this intangible action called privatization. Nature is an integrated whole, and it remains integrated before privatization and after.

What we have divided, of course, is not the land but authority over the land, particularly the power to make management decisions about it. Private property in a legal sense is a bundle of rights and responsibilities, powerful enough but intangible for all its power. As a community of life the land remains undivided; its interconnections and interdependencies still present and as biologically important as ever.⁴⁰

Consider for a moment the cow or steer on Hardin's hypothetical pasture, after the pasture has been fragmented. Owners of particular parcels might put up fences, and cows and steers might then stay in the private places where they belong. But even at this stage, to what extent has the commons been divided? Cattle will likely respect property lines, but what else will? Not the wind, the sun, the rain. Not the percolating groundwater. Not the drifting pollen and fluttering butterflies and perhaps the spreading cheat grass. Other large mammals might also

⁴⁰ See, e.g., Lynda L. Butler, *The Pathology of Property Norms: Living Within Nature's Boundaries*, 73 S. CAL. L. REV. 927 (2000); Terry W. Frazier, *The Green Alternative to Classical Liberal Property Theory*, 20 VT. L. REV. 299 (1995).

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respect fences because they must. But in what useful sense have they been privatized?

The truth is that privatization as commonly understood is not chiefly a physical act. It is a matter of fragmenting rights and responsibilities among humans. When a commons is intact and uncontrolled no one has management power over it; it is a free-for-all, an unmanaged mess, precisely the kind of place that Hardin condemned. On the other hand, when a commons is well managed by all users collectively, rights and responsibilities are vested in the group as a whole. The users collectively have the power, if not to avoid the tragedy entirely, at least to diminish it considerably.⁴¹

What then happens, in terms of costs and benefits, when a natural commons is broken up? Most obviously, the scale of management shifts to a physically smaller one. Instead of having a single management regime over a large scale, we have lots of management regimes over smaller scales. And from this many consequences could flow, some good, but some definitely not so good. One not-so-good consequence is that we have increased significantly the problem of management boundaries. If boundaries always create an incentive for managers to ignore spillover effects, a vast increase in boundaries exacerbates the problem. When the grazing commons is intact, an effect that spreads from one part of the commons to another part remains within the same commons, and those who manage the commons are affected by it. But when the commons is divided into private shares, a boundary line might intervene. Now, an effect that spills over from one place to another might well cross a boundary line. The one causing the harm can ignore it. Usefully distinguished from this problem of heightened externalities is a second problem exacerbated by fragmentation: the increased difficulty of addressing ecological challenges that require planning at the landscape level. When a sound land use plan is possible only over large spatial scales, successful planning becomes less and less likely as the land is divided into ever-smaller pieces.

⁴¹ It may be merely diminished because the hypothetical commons will itself be part of a larger landscape, the use of which could impose harm on surrounding lands. Whenever land management takes place within legal boundaries – as it pretty much always does – managers have an incentive to ignore harmful effects that spill over to surrounding lands. Thus, even when a commons is well managed by all users, there remains the worry that its use will harm surrounding regions, giving rise to some element of tragedy on a larger spatial scale.

Consider the case of flooding caused by excessive drainage. Upstream drainage can cause downstream flooding. When an entire watershed is managed as a single commons, the group that drains is the group that suffers the flooding; costs and benefits are matched. When the commons is divided, however, with upstream and downstream lands separately owned, a mismatch is created. The upstream owner now has little incentive to reduce drainage. The downstream owner does have reason to act, but decisions about upstream drainage are not his or hers to make.

The problem here is not only a matter of dividing land into private parcels. It is also a problem of dividing land into smaller units of governance in the situation where a government body has power to control land uses. Here, urban sprawl offers evidence. When a single governing unit controls all land planning around an urban area it can control the rate and forms of expansion. If haphazard expansion has ill effects, the effects will be felt within the single jurisdiction. What happens, though, when the political commons is divided into smaller legal entities? Once again, more boundaries arise, externalities increase, and no person or group has the power to coordinate the whole.

Let us add to the mix of hypotheticals the case of wildlife habitat, perhaps along a riparian corridor, and to make the case realistic pick one of the ninety-nine percent of all species that lack market value. Most species today are declining because of habitat loss.⁴² To preserve a species, planning is needed to protect the habitat.⁴³ When sufficient habitat exists within a single parcel, a parcel manager could prepare and execute a habitat-protection plan. But nearly always, critical habitat will be spread over many parcels. No single owner will be able develop a conservation plan. An individual owner could take care of part of the needed habitat, helping the situation for a time. But long-term prospects in such a case would be poor, for any one of numerous reasons – because the species wanders, to cite one example, or because the population on the single parcel is too small to sustain alone. Once again, fragmentation of the whole gives rise to a crisis of management.

In all of these instances, fragmentation does not undercut all chance of cooperative management: landowners and jurisdiction managers can

⁴² See Wilcove, *supra* note 25.

⁴³ See Timothy Beatley, *Preserving Biodiversity: Challenges for Planners*, 66 AM. PLANNING ASSN. J. 5 (2000); Neil Gunningham & Michael D. Young, *Toward Optimal Environmental Policy: The Case of Biodiversity Conservation*, 24 ECOLOGY L.Q. 243 (1997).

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still make joint plans to remedy problems that transcend human-drawn lines on the map. If a suburban area is divided into just two jurisdictions, cooperation of this type might well take place, just as, in the drainage illustration, landowners might strike a deal if there is only one owner upstream and one owner downstream. But negotiations like this are often costly and culturally awkward, and they frequently do not occur, even when only two parties are involved. As the numbers increase above two, the chances of agreement fall quickly.⁴⁴ Even when a cooperative spirit exists among owners and managers, fragmentation increases the transaction costs of arranging joint action. It increases, too, the problems of free riders and holdouts. Finally, landscape problems may be palpable to some but not to others as people lose familiarity with the condition of the landscape as a whole. In fundamental ways, fragmentation undercuts needed action.

So, what is the lesson from these examples? What can be learned about this seemingly wise idea of dividing a commons into private parcels, or dividing land use regulatory power into small jurisdictional units in hopes of responding better to local constituents?

When Hardin and his followers speak highly of privatizing the commons they mean that private property is far better than an open-access commons. And unquestionably it is. But what about the comparison between private property and the well-managed commons, a commons such as certain high-mountain pastures in the Swiss Alps, which graziers have managed successfully for generations despite challenging ecological constraints? When this is the comparison, matters suddenly look different. Indeed, the claim of some scholars is that private property has a hard time producing results as good as the well-managed commons, in terms of maintaining the land's productive capacity.⁴⁵ At best, private property can match the well-regulated commons. When ecological conditions are challenging or significant externalities are likely, the well-regulated commons is the better approach.

It is the better approach, that is, when enough social cohesion and motivation exist for the commons to work right, for a well-regulated

⁴⁴ Some of the reasons are considered in the classic work, MANCUR OLSON, *THE LOGIC OF COLLECTIVE ACTION* (1965).

⁴⁵ See generally JEAN-MARIE BALAND & JEAN-PHILLIPE PLATTEAU, *HALTING DEGRADATION OF NATURAL RESOURCES: IS THERE A ROLE FOR RURAL COMMUNITIES?* (1996).

commons is itself a daunting challenge to create and sustain.⁴⁶ It is daunting anywhere around the world, and it is particularly daunting in the United States, which has no tradition of the well-managed commons and which is so influenced by individualism and a free-market ethos that a true, well-regulated commons would be hard to operate on a scale above the neighborhood homeowners association.⁴⁷

So where, then, might one head with this? If the well-regulated commons is hard to imagine in this country, and yet the fully divided landscape creates new problems even while it might help solve old ones, where does one come out?

Private land ownership has many good aspects to it and they should not be underweighed. Private property exists, not because it is an individual natural right – although sometimes people think it is – and not because the Constitution somehow mandates it or makes it possible, which it does not do. Private property is a creature of positive law, mostly state law, and draws its justification from the good of the sovereign people as a whole.⁴⁸ Private property exists because of the good things that it brings and helps people do: things like stimulating economic enterprise, facilitating privacy, and adding stability to civil states.⁴⁹ Fortunately, private property is a highly flexible institution, in the sense that the rights and responsibilities of land ownership can be crafted in a wide variety of ways, giving land owners more or less managerial control and imposing on them greater or lesser duties to look out for the common good. So the question is not whether private property should exist, just as it is not whether in some way the commons should be divided. It is a question of how far to go. What kinds of rights should private owners possess? How far should we go in dividing up managerial rights?

⁴⁶ *E.g.*, OSTROM, *supra* note 3; Thompson, *supra* note 1.

⁴⁷ The issue is thoughtfully considered in cultural terms in WENDELL BERRY, ANOTHER TURN OF THE CRANK 46–63 (1995). A more optimistic assessment, focused on New England, is offered in DONAHUE, *supra* note 19.

⁴⁸ *See, e.g.*, Fox River Paper Co. v. R.R. Comm'n, 274 U.S. 651, 657 (1927) (stating that the Fourteenth Amendment “affords no protection to supposed rights of property which the state courts determine to be nonexistent”); Eric T. Freyfogle, *Ethics, Community, and Private Land*, 23 *ECOLOGY L.Q.* 631 (1996).

⁴⁹ Hence, those lawmaking and regulatory bodies that tinker with the rights and responsibilities of private property need to consider the full range of interests that the institution serves – as they often do not. *See* Eric T. Freyfogle, *The Particulars of Owning*, 25 *ECOLOGY L.Q.* 574 (1999).

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These comments about private property point the way to a central insight. Many land use problems in the United States have arisen, not because society has divided naturally interconnected landscapes into private parcels, but because it has divided them too thoroughly. And too thoroughly means not that the pieces on average are too small or that too much has been divided, although perhaps these things have been done. It means that landowner managerial rights are too powerful and exclusive.⁵⁰

As commonly conceived these days, private property gives landowners the right to do pretty much anything they want on their lands so long as they do not physically invade neighbors or otherwise cause visible harm to others.⁵¹ This vision of private property is not sustained by law and does considerable violence to the history of property as an institution.⁵² Still, it has become a widespread cultural belief and, as such, wields great power. In this form, private property represents an excessive, harmful division of the commons, for it retains at the commons level far too little authority to address common concerns. As thus conceived, property law gives landowners rights that are simply too extensive.

Private property is a flexible institution. Laws governing it can give owners greater or lesser rights and can reserve for the community greater or lesser powers over the landscape as a whole. What this flexibility means is that we need not choose between maintaining the commons under shared management and dividing it into private pieces. Privatization is a question of degree: not just whether to privatize or how much of the land to privatize, but how far to go in shifting managerial control from the group to the individual.

When Garrett Hardin and others viewed privatization as a solution to the tragedy of the commons they implicitly embraced three assumptions that were critical to their reasoning. They assumed that what a landowner did on his or her parcel would pretty much stay

⁵⁰ Related issues of ownership fragmentation are considered in Michael A. Heller, *The Boundaries of Private Property*, 108 YALE L.J. 1163 (1999); Thomas W. Merrill & Henry E. Smith, *Optimal Standardization in the Law of Property: The Numerus Clausus Principle*, 110 YALE L.J. 1 (2000).

⁵¹ I speak here of political culture, not law.

⁵² More sensitive interpretations are offered in GREGORY S. ALEXANDER, *COMMODITY & PROPRIETY: COMPETING VISIONS OF PROPERTY IN AMERICAN LEGAL THOUGHT 1776-1970* (1997); WILLIAM J. NOVAK, *THE PEOPLE'S WELFARE: LAW & REGULATION IN NINETEENTH-CENTURY AMERICA* (1996).

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within the bounds of that property; spillover effects or externalities, that is, would be minor or easily remedied.⁵³ They assumed that the power of the market was sufficient to encourage owners within the bounds of their parcels to conserve what they owned. And they assumed that landowners were able, acting alone or through easily arranged private transactions, to use their lands in ways that amounted to good land use. It is now clear, or ought to be at least, that these assumptions are wrong to significant degrees.

It is clear, ecologically, that spillover effects are numerous, vital, and often hard to trace. Harms and benefits, that is, remain poorly matched, even after the application of basic rules on air and water pollution.⁵⁴

It is equally clear that, even within land boundaries, the allure of gain is often inadequate to promote land use practices that are sustainable over the long run – as the widespread problem of soil erosion illustrates.⁵⁵ Indeed, the competitive pressures of the market can push (or pull) landowners to embrace practices that, ecologically and ethically, are distinctly unwise.

Finally, it is clear that much conservation work requires coordination of land uses on large spatial scales. Problems such as urban sprawl, excessive drainage, and wildlife habitat degradation are simply not matters that individual owners acting alone can handle, whether by their independent land-management activities or by zealously protecting their land boundaries. Indeed, in many instances individual owners are literally helpless. A landowner along a river is subject to the actions and whims of other riparian landowners and can do literally nothing alone to sustain the river's health. A landowner anxious to sustain wildlife populations may be completely frustrated by actions taken on other tracts.

In eastern Australia today – in New South Wales – an intriguing activity is taking place.⁵⁶ An institution called the Tilbuster Common

⁵³ Excluding distinct emissions of air and water pollution. See *supra* note 39.

⁵⁴ One minor bit of evidence is offered in Jeremy D. Maestas et al., *Biodiversity and Land-Use Change in the American Mountain West*, 91 GEOGRAPHICAL REV. (forthcoming 2002) (charting changes in biodiversity when private lands shift from ranching uses to low-density residential development).

⁵⁵ See *supra* note 8 and accompanying text.

⁵⁶ Phil Coop & David Brunckhorst, *Creating Contemporary Commons to Enhance Economic Productivity: A Grazing Commons in Rural Australia* (forthcoming 2002) (manuscript on file with author).

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Resource Cooperative has been formed, and it is attempting to figure out how best to operate. Tilbuster arose because of a problem that Garrett Hardin, writing in 1968, probably could not have imagined. The setting is a grazing area, and land there has long been divided into private parcels. The predicament today is that graziers are unable to make good use of their lands. Weather conditions and terrain and soils and the like are such that it is simply hard to make a living grazing animals on individual parcels. The solution, many of them believe, is to reassemble the natural commons, and that is exactly what they are doing. They are erasing property boundaries and gathering their animals into a single herd that can be moved around more flexibly in ways that avoid overgrazing. It has been a hard struggle for the graziers, for they have become quite attached to the idea that they each hold a little fiefdom that they can manage alone. But separate management sometimes comes at great cost. The graziers of Tilbuster are not giving up their private rights entirely; not by any means. What they are giving up is some of their individual management powers, while gaining in exchange a right to participate with other graziers in the management of the whole. They still have their rights, they have simply been reconfigured.

One should not make too much of the Tilbuster Common Resource Cooperative; it is certainly unnecessary to assume that large parts of the country should be transformed into a common buffalo grazing ground. But there is a need today, in the United States and elsewhere, to exercise the same kind of courage and imagination that graziers in Australia are displaying. There is a need to rethink how far we have gone in giving managerial rights to the owners of distinct land parcels. There is a need to realize, as at least some graziers in Australia have realized, that privatization can go too far. The unmanaged commons can give rise to a tragedy, but excessive fragmentation yields tragedies of its own.⁵⁷

Urban sprawl, excessive drainage, wildlife habitat – all of these call for management at the commons level. Somehow, in some way, managerial powers that have been vested in the individual landowner need to be retrieved and brought back into some sort of common management scheme, not erasing private boundaries but diminishing

⁵⁷ The term “tragedy of fragmentation,” I believe, better captures the fundamental enigma in the land use setting than does the similar and more general term sometimes used, the “tyranny of small decisions.” See Alfred E. Kahn, *The Tyranny of Small Decisions: Market Failures, Imperfections, and the Limits of Economics*, 19 *KYKLOS* 23 (1966) (originating the term); see also William E. Odum, *Environmental Degradation and the Tyranny of Small Decisions*, 32 *BIOSCIENCE* 728 (1982).

their importance. To do that, of course, is no easy task, and not just because rural culture seems so resistant to any idea of shared property rights and land use regulation. It is hard because successful institutions for landscape management are simply not easy to develop. Free market admirers employ a familiar refrain when talking about market mechanisms to solve resource allocation problems: get the prices right. In the case of landscape-scale problems, a similar adage is in order: get the institutions right.⁵⁸ Craft institutional arrangements so that people who live in a place can gather together and make sensible, ethical, ecologically sound decisions about their shared landscapes, and at the proper geographic scale: at the watershed scale in the case of drainage problems, and at the scale of the entire urban region in the case of urban sprawl. Hard to do? Yes. But essential nonetheless.

VI. THE COSTS OF HARDIN'S TRAGEDY

It is tempting, when tracing citations to Garrett Hardin's famous article, to assume that the piece has had dramatic effects on thinking about land, and no doubt it has. Yet it is likely that the article's renown has had as much or more to do with the eagerness of readers to receive its message - or at least part of its message (the lesser part in Hardin's view) having to do with the alleged miracles of privatization. Given the right spin, Hardin's analysis would soon become a central element of libertarian, free-market thought, which would be prone to overlook the dissonance between Hardin's theory and real-life facts.

One ill effect of Hardin's popularity was that many readers lost sight of important wisdom on land management that Hardin's predecessors had developed over decades of hard work. Hardin was hardly the first to analyze landscape problems. Aldo Leopold among others had delved deeply into the issue a few decades earlier, drawing conclusions from his detailed field work in many human-occupied landscapes. Beginning with his important essay from 1934, "Conservation Economics," Leopold laid bare the fundamental economic predicament of land conservation.⁵⁹

⁵⁸ As Elinor Ostrom notes, "'getting the institutions right' is a difficult, time-consuming, conflict-invoking process." Ostrom, *supra* note 3, at 14. A thoughtful addition to the legal literature on the subject is Christopher S. Elmendorf, *Ideas, Incentives, Gifts, and Governance: Toward Conservation Stewardship of Private Lands*, U. ILL. L. REV. (forthcoming 2002).

⁵⁹ Aldo Leopold, *Conservation Economics* (1934), reprinted in RIVER OF THE MOTHER OF GOD, *supra* note 18, at 193. As was often the case, however, Leopold upon his death left many of his ideas in manuscript form. E.g., Aldo Leopold, *Ecology and Economics in Land Use* (undated) (unpublished manuscript, on file at 9/25/10-6, Aldo Leopold Papers, University of Wisconsin-Archives); Aldo Leopold, *Economics of the Wild* (undated) (unpublished

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One landowner's actions had distinct effects on surrounding lands and on the community at large. Bad land use could drag the community down, just as good land use could help lift it up. Conservative land use, Leopold knew, could generate substantial economic benefits, but they were benefits that accrued to the community rather than to the individual landowner. Conservation frequently made economic sense when a single owner (such as the federal government) owned entire landscapes, for in such a case the benefits of using one acre well spilled over to other acres under shared management. But in the fragmented farmlands of Wisconsin things were different. Conservation efforts that made sense at the landscape scale and in the long run no longer made good economic sense for the individual owner. The individual landowner simply could not capture the benefits of good land use, just as he did not bear the full costs of bad land use. When landowners held secure rights and the market alone was in charge, landscapes often slid down.

Leopold's wisdom was not what many of his contemporaries wanted to hear, and it would be wrong to say that they all agreed with him. But many did; many could see, as Leopold could see from his years of study, that fragmented landscapes posed grave conservation challenges.⁶⁰ Some who did see no doubt could spot the flaw in Hardin's analysis when it appeared in 1968. But most of Hardin's readers knew little about the issue and about the work that had preceded him. For them, and for many new readers to come along, Hardin's analysis would become their point of beginning in understanding environmental issues. Privatization solved the problem of land degradation, so Hardin seemed to say. Leopold's contrary wisdom would be pushed aside.

Hardin's simple story deviated in yet another significant way from the view that Leopold expressed in his writings, the view that bad land use was morally wrong and should be condemned as such. A strong individualist, Leopold was reluctant to draw upon the powers of government to halt land degradation, yet he knew that law would be needed unless landowners voluntarily changed their ways.⁶¹ "Industrial

manuscript, on file at 9/25/10-6, Aldo Leopold Papers, University of Wisconsin-Archives); Aldo Leopold, *Economics, Philosophy, and Land* (Nov. 23, 1938) (unpublished manuscript, on file at 9/25/10-6, Aldo Leopold Papers, University of Wisconsin-Archives).

⁶⁰ See LEHMAN, *supra* note 21, at 5-41.

⁶¹ Leopold did not appreciate the necessary role of government in defining the rights and responsibilities of land ownership, and thus assumed that a legal reshuffling of such rights would involve government in a new type of work. He also did not realize how significantly landowner rights had shifted in the previous century, and thus apparently

landowners and users, especially lumbermen and stockmen," he would write, "are inclined to wail long and loudly about the extension of government ownership and regulation to land, but (with notable exceptions) they show little disposition to develop the only visible alternative: the voluntary practice of conservation on their own lands."⁶² Such voluntary action, Leopold could also see, was not likely to come about - given the unfavorable economics - unless social norms propelled it.⁶³ Bad land use needed to be labeled as such and talked about in moral terms, with criticism directed against the owner.⁶⁴ As Leopold would sum it up, "social approbation for right actions: social disapproval for wrong actions."⁶⁵ As a professional educator, Leopold understood the possibility of affecting land use practices through educational means, but he was pointed in his criticisms of conservation education of his day, the message of which he distilled as "obey the law, vote right, join some organizations, and practice what conservation is profitable on your own land."⁶⁶ The formula, he said, was "too easy to accomplish anything worth-while . . . [I]t defines no right or wrong, assigns no obligation, calls for no sacrifice, implies no change in the current philosophy of values."⁶⁷

Given a chance, Leopold doubtless would have objected to Hardin's willingness to sanction human selfishness. Leopold would have discussed the tragedy in moral terms, offering a harsh name for the

underappreciated the flexibility inherent in the institution of private ownership. Even today, however, sharp distinctions are often drawn between laws that define property rights (often rules of common law) and laws that regulate the exercise of such rights. Advocates of free-market approaches to land issues, for instance, sometimes freely acknowledge the need for new laws that define landowner rights while expressing sharp opposition to land regulations, which perform similar if not identical functions. *E.g.*, ANDERSON, *supra* note 1. Policy differences among scholars today could well diminish if more attention were paid to the definition-regulation distinction, so clear to some yet so artificial to others, and to the knotty, practical issues having to do with how ownership norms are best kept up-to-date, by whom, and through what processes. See Freyfogle, *supra* note 49; see also Eric T. Freyfogle, *The Owning and Taking of Sensitive Lands*, 43 UCLA L. REV. 77, 103-08 (1995).

⁶² LEOPOLD, *supra* note 30, at 213.

⁶³ Leopold's many writings on the subject include *The Farmer as a Conservationist* (1939), *Ecology and Politics* (1941), and *Land-Use and Democracy* (1942), reprinted in RIVER OF THE MOTHER OF GOD, *supra* note 18, at 255, 281, 295.

⁶⁴ See, *e.g.*, Aldo Leopold, *The Ecological Conscience*, in RIVER OF THE MOTHER OF GOD, *supra* note 18, at 338.

⁶⁵ LEOPOLD, *supra* note 30, at 225.

⁶⁶ *Id.* at 207.

⁶⁷ *Id.* at 207-08.

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grazier who egotistically harmed his fellow graziers.⁶⁸ He would have identified selfishness as the root cause of the tragedy, not the lack of law-based mechanisms to contain the behavior. Unintentionally or otherwise, Hardin would play a role in undercutting efforts to act on Leopold's proposed land ethic. By withholding comment on the grazier's conduct, he would implicitly approve of it. And by approving of it, he would heighten the need, one day, for the law to intervene. If land users acted badly it was not their fault, Hardin seemed to say: it was the government's fault for letting them do it. In the end, Hardin would carry the day, his moral agnosticism eclipsing Leopold's call for integrity and responsibility.⁶⁹

Hardin's shortcoming here might have been offset had he teased out of his narrative one of its important implications, but again he remained silent. Hardin assumed, rightfully one would guess, that the grazier who dragged down the commons might in fact have wanted to see the commons well used. Indeed – as Hardin's argument clearly implied – it made economic sense for the grazier to get together with other graziers to protect the whole through mutual coercion, if that was the only way to avert the tragedy.⁷⁰ A grazier, that is, might abuse the commons if left to

⁶⁸ Leopold depicted the types of social norms that he saw as desirable in his *The Farmer as a Conservationist* (1939), reprinted in *RIVER OF THE MOTHER OF GOD*, *supra* note 18, at 255. The strong moral voice on conservation issues today could well be the Kentucky writer and farmer Wendell Berry, whose books (some forty in number) offer sharp critiques of the cultural values that underlie land degradation. His work is usefully approached through his essays, particularly those recently collected in *THE AGRARIAN ESSAYS OF WENDELL BERRY* (Norman Wirzba ed., forthcoming 2002).

⁶⁹ In taking this view, I disagree with those who believe the moral language on such land use issues is unhelpful, although mindful of the potential divisiveness of such talk, particularly when criticism comes from the outside. *E.g.*, Thompson, *supra* note 1, at 256 (recommending that issues of blame be put aside and that land use issues be dealt with on strictly pragmatic bases). If economically sensible land degradation is not wrong in terms of communal values and landowner responsibilities, then it makes perfect sense for landowners to claim (as they so often do) that they ought to be paid by the community to change their ways – a practice that can be unfair to taxpayers and that can further strengthen images of ownership in which landowners have few or no communal duties. To avoid talking about landowner responsibility is also to help conceal the harm that is being caused, given the pre-existing (and from my experience still widespread) understanding that landowners should not use their lands in ways that cause harm. To treat landowners as if they had done nothing wrong is to suggest necessarily that their activities are not harmful by community standards. The issue here, of course, is a variant on a longstanding enigma raised by liberal thought: to what extent should individuals be blamed for wrongful behavior and to what extent should blame rest on society or “the system.”

⁷⁰ See Thompson, *supra* note 1, at 245 (“Moreover, the factors that undermine peoples’ incentive to reduce their individual use of an unrestricted commons should not undermine

act in isolation, while fully supporting protective measures if allowed to organize with other graziers to develop mutually binding rules. As a market participant the grazier might act one way, while as a voting citizen of the commons he might act far differently. Each decision made economic sense.

Had Hardin noted this implication, he might have helped ward off what would soon become a widely held but erroneous idea: that individuals show their true policy preferences when they act in isolation as market participants. Critics of environmental laws would popularize the idea as a means of challenging public opinion polls showing widespread support for strong environmental policies. If people did not embrace environmental life styles in their personal lives, the argument would soon go, then surely they did not really value environmental protection as much as they claimed. Hardin's hypothetical implicitly showed the untruth of this argument: consumer and citizen preferences, driven by utilitarian calculations, might properly and logically lead in much different ways, simply because of the mismatch of costs and benefits.⁷¹ The landowner who conserved generated benefits that the landowner alone could simply not capture. It was at the community level that conservation made sense, which was why Leopold and others urged landowners to think as citizens rather than as self-centered individuals.⁷²

In the end, though, it was not Hardin's omissions that would perhaps sow the most confusion but rather his specific, two-pronged proposal for dealing with the tragedy that he described. In Hardin's scheme, the universe of environmental problems could be divided according to the two remedies available to deal with them: there were problems that were best addressed by privatization and those best

their incentive to support a collective solution that constrains everyone's use of the commons.") (citations omitted).

⁷¹ A useful exploration of the differences between citizen and consumer preferences is offered in MARK SAGOFF, *THE ECONOMY OF THE EARTH: PHILOSOPHY, LAW, AND THE ENVIRONMENT* 51-53, 65-68 (1988), though Sagoff situates the distinction chiefly in ethical rather than economic terms. Professor Carol Rose harshly (and wrongly, I believe) ridicules the distinction in her review of Sagoff's book. See Carol Rose, *Environmental Faust Succumbs to Temptations of Economic Mephistopheles, or, Value by Any Other Name is Preference*, 87 MICH. L. REV. 1631, 1635-38 (1989).

⁷² The citizen-consumer distinction is less distinct when a policy position is grounded on issues of individual morality, but remains strong when a particular policy implements a moral duty best understood at the communal level – as in the case of the many proposed environmental duties (e.g., preserving endangered species or wilderness areas) that can only be performed or achieved at the communal level.

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addressed at the communal level, through mutual coercion mutually agreed upon. The contrary truth is that these types are not distinct; they merge together to form a smooth continuum of remedial options. At one end of the continuum is the option of dividing the commons completely and giving individual owners full control. At the other end is the option of putting the resource completely under shared management, recognizing no individual use rights that rise to the level of private property. In between are many gradations – resources that can be divided in the sense of allocating certain private rights to individuals while retaining certain managerial powers at the commons level.⁷³

What rights would we give to owners and what rights might we retain at the commons level? The answer is: we can be flexible. We can answer such questions in widely varied ways, tailored to the needs of particular resources and particular settings. And not only can we answer the questions in varied ways, but our answers might rightly change over time. As populations rise, as technology improves, as our interdependence rises – as these trends and others unfold, we may find ourselves – as certainly we do today – needing to take back from individual owners some of the rights that they now assert.⁷⁴

VII. CONCLUSION

We suffer today in the United States from multiple examples of the tragedy of fragmentation, the tragedy of taking a natural commons and giving management rights over it to owners of individual small parcels, without retaining for the collective whole enough power to address problems and to achieve goals that can only be undertaken at the larger landscape level. Fragmentation is a common by-product of

⁷³ It is worth noting that Hardin's two options – mutual coercion and privatization – differ far less than commonly perceived when it is remembered that private property itself is a creation (in practice if not philosophy) of law-making efforts, and operates in effect as a mutual coercive legal restraint on individual freedom. When a law vests property rights in an individual, it effectively constrains all other people from making free use of that resource. Consider the landowner who desires to pollute a river: a legal constraint on pollution could come either in the form of direct regulation (Hardin's mutual coercion), or in the form of secure property rights in downstream owners to enjoy the river free of pollution. The difference lies, not in the source of the restraint (both arise from law), but in the fact that, in the latter instance, the polluter could theoretically purchase the right to pollute from downstream owners (an impractical task, of course, if downstream owners are numerous or disinterested in selling). As for which approach is better, a detailed study would be needed, paying attention, *inter alia*, to the interests of the public generally who would also be affected by the pollution.

⁷⁴ On the other hand, there may be times and respects in which the opposite might well make sense – vesting individual owners with greater managerial powers.

individualism and a love of individual liberty, and the United States embraces liberty and individualism more zealously than any other in the world. But the nation has got itself into a bind. We need to back up a bit, drawing upon alternative strands in our cultural heritage, strands that honor cooperation rather than competition, that look to the benefits of shared action rather than rugged individualism, that see the benefits to all in promoting, not our individual wants alone, but also jointly developed visions of the common good.

